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# American CONCHOLOGIST

Quarterly Journal of the Conchologists of America

# CONCHOLOGISTS OF AMERICA, INC.

Volume 33, No. 1 March 2005

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: *Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.*



Visit the COA website: http://conchologistsofamerica.org. Subscribe to Conch-L, the COA listserver at: listserv@listserv.uga.edu instructions on the COA web site.

## COA President's Message

As we start a new volume of *American Conchologist* I direct your attention to our other form of outreach, our website at: conchologistsofamerica.org. As mentioned by Editor Eichhorst in our last issue, the new address and re-design of our site have been through the efforts of Marcus Coltro and Carlos Henckes. They certainly merit our thanks for all their work, both during the past year and as the site continues to develop.

In another wonderful development, I am pleased to acknowledge the recent donation of $10,000 from the Boston Malacological Society, see the separate article below, which establishes a grant in memory of two most prominent Harvard malacologists, William James Clench and Ruth Dixon Turner. This is a significant addition to our growing endowment that supports the COA's educational grants program and again affirms the growing reputation that our organization enjoys in furthering studies in malacology.

It will soon be time for our 33rd annual meeting and I hope that you are all making plans to attend. Our venue at Punta Rassa, which looks across at Sanibel Island, is nothing short of spectacular and I was greatly impressed when I toured the Sanibel Harbour Resort and Spa last year. Since then the hotel has undergone another refurbishment, inspired by Hurricane Charley, and is even better than before. Before you pack your bags, however, be sure to consider sending a donation to the auction. Every contribution helps fuel our grant programs and is greatly appreciated.

Enjoy this issue and see you in July.

Hank Chaney

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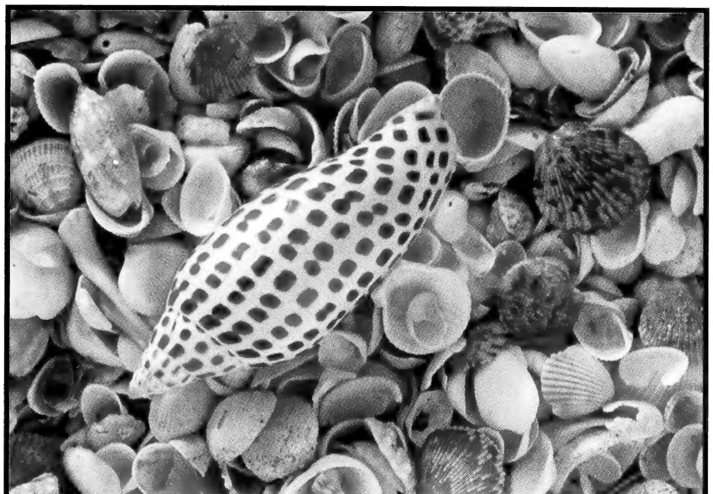

# 33rd Annual COA Convention is the 19th -24th of July, 2005.

**The location is the Sanibel Harbour Resort and Spa, Punta Rassa, Florida. Punta Rassa and the Resort are located on the mainland just before you cross the Sanibel Causeway. The Ft. Myers airport provides easy connections.**

**The hotel will be able to handle all of our events under one roof. The rooms are spacious, well appointed with many extras, and all face beautiful San Carlos Bay.**

**Highlights include a mini shell show and mermaid parade, an evening with Peter Dance (noted author and malacologist), an open house cocktail party at the Bailey Matthews Shell Museum, our COA annual oral auction (Friday evening), and a number of presentations on different seashell families and related aspects of conchology. Field trips start one day prior to the actual convention, on the 18th of July. The bourse will be on Saturday and Sunday, July 23 and 24, with the banquet on Sunday evening.**

**Registration forms were mailed out in the last issue of American Conchologist, but they are also available on line at the COA web site: http://conchologistsofamerica.org (click on conventions).**

**If you are looking for that special shell, it will probably be on a table at the Bourse. If you want to talk to an expert on a molluscan family or any aspect of conchology, they will probably be found at the Sanibel Harbour Resort and Spa, Punta Rassa, Florida, from 19 to 24 July 2005 - be there!**

**There is still time to donate shells or shell related items for one of the many planned auctions. The money we make at this event goes for research grants in conchology. Send donations to Jim and Bobbi Cordy, 385 Needle Blvd., Merritt Island, Florida 32953. (321) 452-5736 corshell@earthlink.net We will send you a tax-deductible receipt immediately!**

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**Correction:** In "The Beach Gypsies: An Exploring Adventure to Cat Island, Bahamas" by Karen VanderVen in the Dec. 2004 issue, the specimen listed and illustrated as *Splendrillia fucata*, p. 11, is actually *Fenimorea halidorema* (Schwengel, 1940). Correction by Peggy Williams.

**Front cover:** *Nautilus belauensis* Saunder, 1976. This seldom seen cephalopod was photographed at 80 feet at night off a reef cliff, Palau, after entrapment at 1,500 feet. Photograph courtesy of Charles E. Rawlings of Winston-Salem, NC. rawlings@mackenzielawfirm.com Readers can look forward to more superb photographs from Charles in the future.

**Back cover:** *Conus gloriamaris* Chemnitz, 1777. This very realistic looking glory-of-the-seas cone is actually a wood carving from the Philippines. It is over 200mm in length and is owned by Sybil B. Burger of Albuquerque, NM.

# ABOUT *CYPRAEA TIGRIS SCHILDERIANA* CATE, 1961

by
**E.L. Heiman**
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*Cypraea tigris* Linnaeus, 1758, inhabits a vast area of the Indian and Pacific Oceans from East Africa to Polynesia. This species is especially variable in the Pacific Ocean where it thrives in coastal areas of innumerable atolls, islands and archipelagos. A Hawaiian subspecies, *C. tigris schilderiana* described by Cate (1961), differs from *C. tigris tigris* "by its larger size and heavier shell, its larger and stronger teeth, its larger and straighter aperture, its broader and deeper fossula, and the almost total absence of lateral thickening or marginal callus." The latter shell character can be seen in Figs. 1-2, a posterior view of two shells from the Hawaiian Islands and Kenya.

however, there are zones in which *tigris* usually becomes distinctly larger: this belt includes China to Japan in the north, the Line Islands to Tahiti in the east, and New Caledonia to north-west Australia in the south..." Schilder mentions also that the average shell length of *C. tigris schilderiana* is outside of the norm and that *tigris* populations from the Hawaiian Islands deserve a subspecific rank.

Later malacologists who did not recognize subspecies in principle or ignored conchological statistical methods, treat *C. tigris schilderiana* as a synonym or a forma (variety). Formae are regularly found unusual individuals differing from the other individuals of a population in shape, color, dorsal pattern etc. Unlike

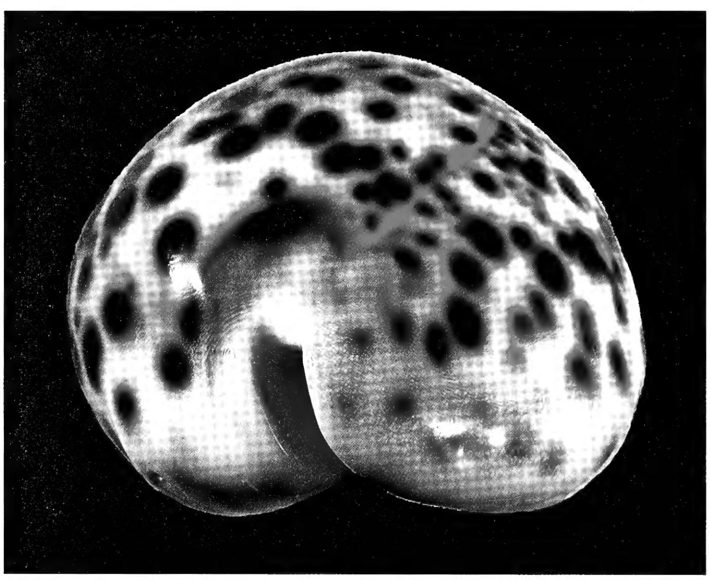


Fig. 1. *C. tigris schilderiana*, 127.5mm, Oahu I., Hawaii Is.

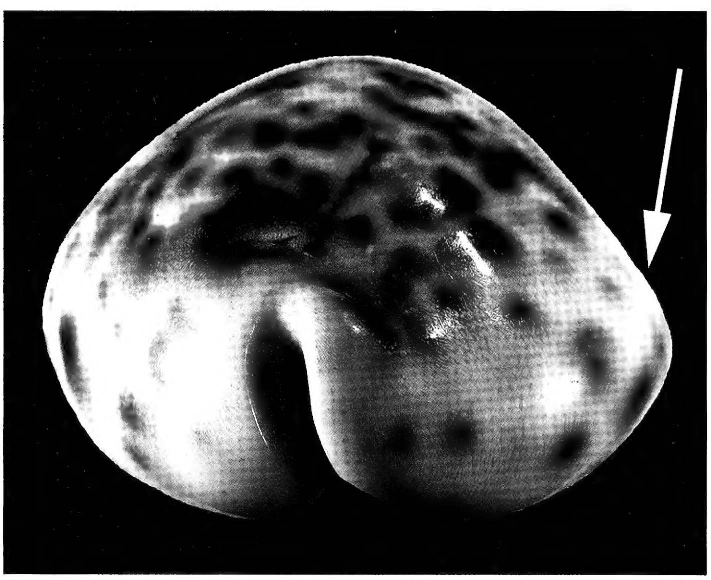


Fig. 2. *C. tigris tigris*, 81 mm, Mombasa, Kenya. Note the marginal callus.

In living cowries, subspecies are geographically separated populations where the majority of shells differ by certain shell characteristics from other groups of populations of the same species. The considerable and consistent differences in the shell characteristics may indicate initiation of speciation in studied populations. Schilder (1962) examined 1,536 shells of *C. tigris* from 27 localities of the Indo-Pacific region and confirmed that "the specimens collected round the Indian Ocean (East Africa to West Sumatra...) are distinctly larger than the shells coming from inner Malaysia (Singapore to Aru Is. and Philippines...), and from the equatorial western Pacific (Marianas to New Guinea and Samoa...). On the border of this central zone with small shells,

subspecies, several formae of a species can be found together in the same locality. Rostrate, dilated, darkened, 'confused,' deformed, melanistic, pallid, and other forms are known in populations of many cowry species. It is hardly correct to use the term forma for shells of different size in a population because the length of individual shells in a cowry population follows approximately the so-called law of normal statistical distribution with a smooth gradient between two extremes (dwarf and giant shells). A number of dwarf, small, normal, large, and giant shells is predictable in every cowry population if its shell characteristics are known statistically . The average shell length is a statistical characteristic

of a whole population, which may not be applicable to a forma (which is a part of a population).

Foin (1972) questioned a subspecific rank for *C. tigris schilderiana.* He developed a theoretical model of distribution of the species in the Pacific Ocean based on assumptions that the zero point of such a distribution is Bougainville Island (Solomon Islands) and the average shell length of *C. tigris* populations is a function of the distance of a population from the zero point. In this model, the distance from Bougainville Island used was not the shortest linear distance, but the shortest linear distance over shallow water via island chains, presuming that *C. tigris* inhabits mostly shallow water. Data from twelve *C. tigris* localities were used. A distribution function, i.e. the mean shell length in *C. tigris* populations versus distance from Bougainville Island can be seen in Fig. 3. Some data in Foin's study were not in harmony with Schilder's (1962) work, especially regarding the Japanese *C. tigris* populations, and Foin excluded them from further analysis.

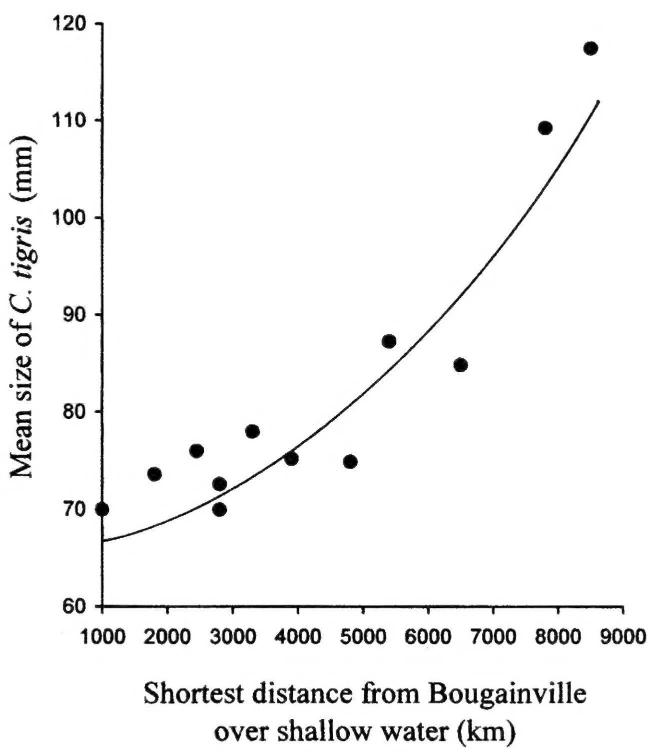



Fig. 3. A distribution function given by Foin (1972).

Foin concluded that *C. tigris* populations in the Pacific Ocean can be characterized by a shell-length gradient. A gradient is a change in the value of a quantity (the shell length, for example) per unit distance (km) in a specified direction, in this case away from Bougainville Island, an arbitrarily chosen center of *C. tigris* distribution in the Pacific Ocean. Some malacologists do not recognize mollusc populations as subspecies if there is the evidence of a gradient in their shell characteristics; such populations are named clines. Foin concluded: "The existence of a length gradient over thousands of kilometers also implies either genetic differences in size that are clinal and population-specific, or developmental plasticity in response to ecological factors. Neither of these supports the validity of *schilderiana* as a subspecies" [and] "...the continuity of lengths across the Pacific does not indicate initiation of speciation of Hawaiian *C. tigris.* Others, however, may feel differently."

There may be different interpretations of the data used by Foin. One of them is shown in Fig. 4. and discerns two different zones of *C. tigris* distribution in the Pacific Ocean: a central zone with relatively small shells and a more distant zone with larger shells. One can see a sharp break in the distribution function. In my opinion, such an interpretation conforms also to the above mentioned conclusion by Schilder (1962) about the existence of several zones of *C. tigris* distribution. The term "zone" seems to be more suitable for describing a distribution pattern of *C. tigris* in the Pacific Ocean than the term "gradient".

Brock (1979) studied statistically populations of *C. tigris* in the Pacific Ocean (including 106 shells from the Hawaiian Islands) and confirmed that "In Hawaii...*C. tigris* attains a size unequaled anywhere else. If size alone may be used as a criterion for subspecies differentiation, then the Hawaiian form warrants this separation." But Brock was apparently not familiar with works by Schilder (1962, 1966) and followed Foin (1972) concluding: "the validity of the Hawaiian subspecies is doubtful and until further experimental work is done, the trinomial should not be used."

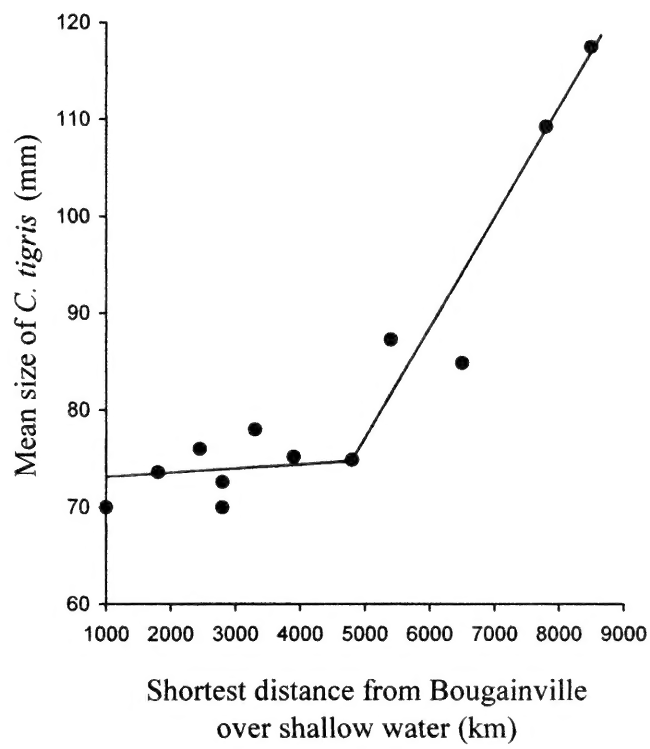



Fig. 4. One possible interpretation of the data used by Foin (1972).

There may be several statistical shell characteristics of cowry populations used for diagnosing subspecies: a number of shells with a certain shape or profile or with a special dorsal pattern and coloration and so forth. The average shell length is one such characteristic. It is used in taxonomic practice and its taxonomic "weight" is the same as the "weight" of any other statistical characteristic.

Both Foin and Brock considered that the shell length distribution function of *C. tigris* is typically clinal. Cline is a stage in the evolution of subspecies. In clines there may be a gradual or stepped change in a shell characteristic of different populations of a species in a certain direction: from the south to the north, from the west to the east, along a coastal line, from the center of a region to its outlying areas, and so forth. Knowing shell characteristics of clines may help in a better understanding of the process of speciation. Winston (1999) explained that malacologists more readily separate clines as subspecies if there are sharp breaks in the rate of change of the clinal character over a geographic distance. An example of a stepped change or a break can be seen in Fig. 4.

Schilder (1966) considered that "subspecies contains several very different stages of evolution" which must be named. The uppermost stage is prospecies, taxa on the threshold between subspecies and real species. The lowest stages are infraspecies and morphs. An intermediate stage in evolution of subspecies is cline. "Clines differ from true subspecies by the far more gradual passing of adjacent taxa into each other, so that only specimens coming from opposite extremes of the inhabited areas show typical characters, while the large area between these extremes contains populations of intermediates or of mixed extremes. ...The gradual development of characters in clines may rise to a chain... of higher taxa as far as to the species level, if it spreads over long distances."

In cowries, there are many examples confirming this point of view. *Erosaria nebrites* (Melvill, 1888) and *Mauritia arabica grayana* Schilder, 1930, are examples of prospecies or almost completely formed species and a decision to consider them subspecies or species is arbitrary. *Erosaria lamarckii redimita* (Melvill, 1888) may be used as an example of infraspecies: the difference between *E. lamarckii redimita* and *E. lamarckii lamarckii* (Gray, 1825) consists of the number of ocellations in the dorsal pattern. This difference is consistent in both *lamarckii* subspecies from opposite extremes of the inhabited areas but it is subtle in the intermediate areas. *Erronea caurica elongata* (Perry, 1811) is an example of a real subspecies: the majority of its shells differ from shells of *Erronea caurica caurica* (Linnaeus, 1758) by the shell shape, aperture, fossula and other consistent characters.

Based on the fact that the average shell length of *C. tigris schilderiana* is outstanding, consistent, and constant; cowrists can admit a subspecific rank for this taxon.

Literature cited:

Brock, R. E. 1979. A statistical study of *Cypraea tigris* in the central Pacific. *The Veliger* 22(2):166-170.

Cate 1961. Description of a new Hawaiian subspecies of *Cypraea tigris* (Linnaeus, 1758). *The Veliger* 3(4):107-109, Plate 19.

Foin, T.C. 1972. Ecological influences on the size of *Cypraea tigris* L., 1758 in the Pacific. *Proceedings of Malacological Society of London* 40:211-217.

Schilder, F.A. 1962. The size of *Cypraea tigris* Linnaeus. *The Cowry* 1(3):43-44.

Schilder, F.A. 1966. Personal views on taxonomy. *The Veliger* 8(3):181-189.

Winston, J.E. 1999. *Describing species. Practical taxonomic procedure for biologists.* Columbia University Press, New York. 518 pp.

## News from the Malacology Collection of the Cincinnati Museum of Natural History and Science

Formerly the Western Academy of Science and the Cincinnati Society of Natural History, the Cincinnati Museum of Natural History and Science (CMNHS) is part of the Cincinnati Museum Center (CMC) and has included a collection of mollusks since at least 1876. Cincinnati was an important center of malacological activity in Ohio and the Midwestern USA during the late 19th century, and a number of notable early American malacologists had various types of association with the collection and with malacology in the region. Substantial activity continued through much of the 20th century, but declined due to the absence of permanent staff.

In 2001, the malacology collection was moved to the Geier Research and Collections Center, a modern facility where CMC maintains its major collections and research laboratories. The collection includes freshwater, terrestrial, and marine mollusks of worldwide distribution. Dry specimens are held in 45 cabinets (approximately 800 drawers). A conservative working estimate places the total number of lots in the tens of thousands. There are also large amounts of material that remain in unsorted boxes. Of particular value and extent are holdings of freshwater mussels and gastropods from the Midwest and other US regions, as well as freshwater and terrestrial mollusks from the Americas, Africa, and Asia. Several type specimens are held in the collection, and more are likely to be found. Most of the collection has not been curated and remains uncatalogued, or cataloged in manners not amenable to modern systematic research.

Since 2003 we have worked on revitalizing the mollusk collection, and toward that end adopted a unified modern cataloguing system. We began working with the non-marine mollusks and have made important progress with US freshwater mussels and freshwater and terrestrial mollusks from South America. In addition, recent specimen collections have been made as part of currently funded field research projects and the personal interests of staff members. An additional large and valuable collection of freshwater mussels from the Midwest was recently accessioned. CMC would like to encourage the use of its collections for scientific or educational purposes through visits, temporary loans or other means. The beginning of our electronic database will soon be available at http://wwwf.countryday.net/FacStf/us/borrerof/

Contact information for the Malacology Collection is:

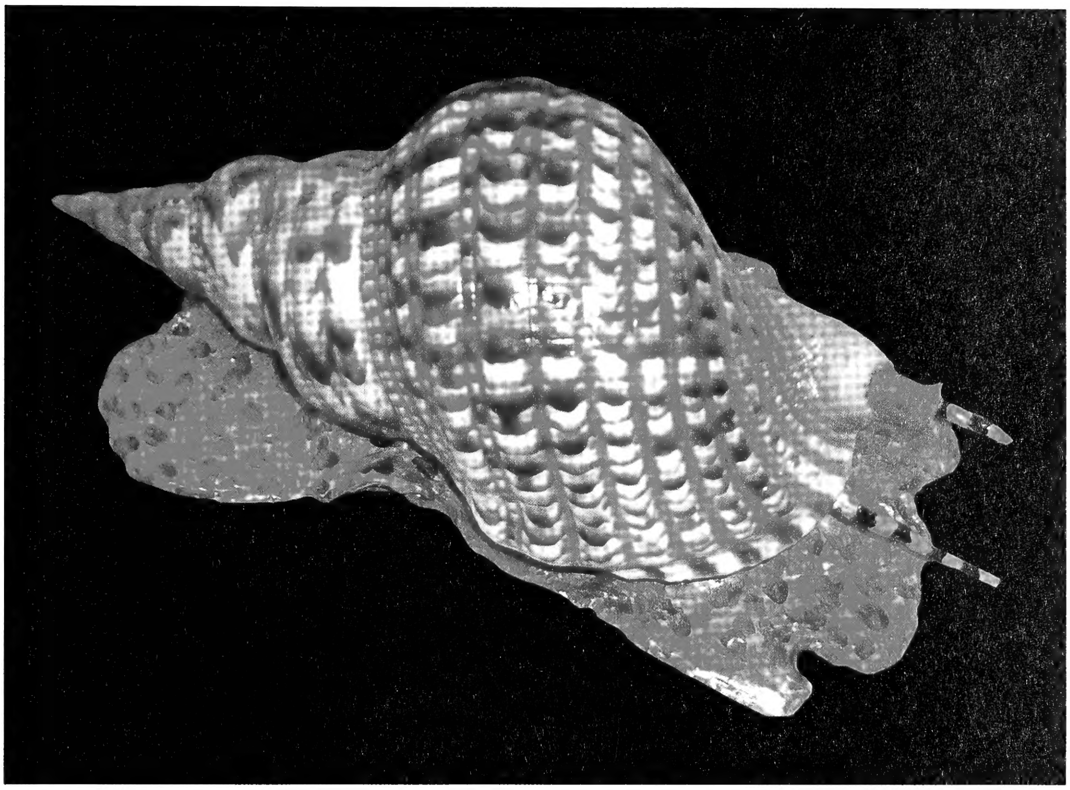
Cincinnati Museum Center at Union Terminal
1301 Western Avenue, Cincinnati, OH 45203
Dr. Stephen Matter, Curator of Zoology
smatter@cincymuseum.org (513) 455-7163
Dr. Francisco J. Borrero, Research Associate & Adjunct Curator of Mollusks
orbrerof@countryday.net (513) 368-6515

# THE CRITTERS INSIDE

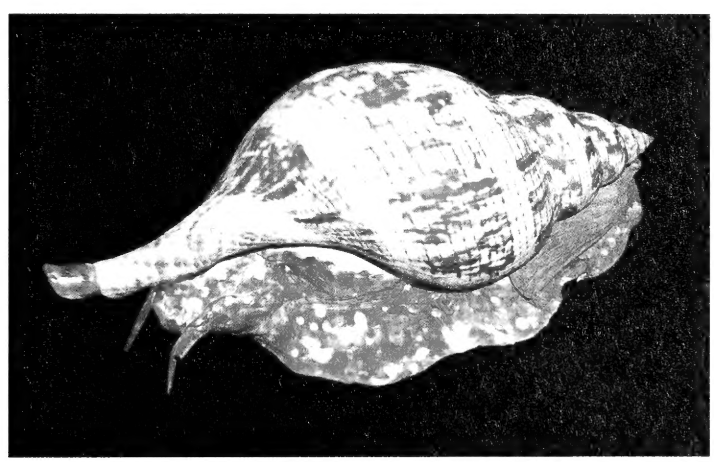
by
Bobbi Cordy
Merritt Island, Florida

About six years ago as my husband Jim was preparing an exhibit on self-collected shells from the Bahamas, I got involved with his hobby. I am not the scientific collector in our family; I leave that to Jim. I get involved with the hobby by inputting my artistic abilities, snorkeling for those little beauties, and using my computer expertise as a desk-top publisher and graphic artist.

At the time I suggested that one of his shells would look terrific with a model of a living animal. I told him I thought I could create it with clay. He said I could experiment only if I did not harm the shell in any way. So I experimented first with an Atlantic triton trumpet (*Charonia variegata*). I used Sculpey III clay as the medium. I had an excellent photo of the animal to start with. I started with clay that was beige, the basic color of the animal. I molded the foot and then the proboscis, which was formed separately and put in the appropriate place at the front of the shell (remaining quite removable). I then made a rather flat stomach-foot part. The animal model (without the shell) was baked on a cookie sheet (sprayed with PAM) for 30 minutes at 275°. After it cooled I used acrylic paints to add the appropriate markings, including the brilliant yellow eye stalks with black stripes. I also put the black dotted eyes on the eyestalks. After the paint dried I used Elmer's glue to put the operculum in place. I thought it turned out very well and the triton shell could just sit right on the model. I even made a groove for it to sit on so it wouldn't slip off. I immediately followed up with a model of the true tulip (*Fasciolaria tulipa*), as the shape of the animal in these two species is very similar.

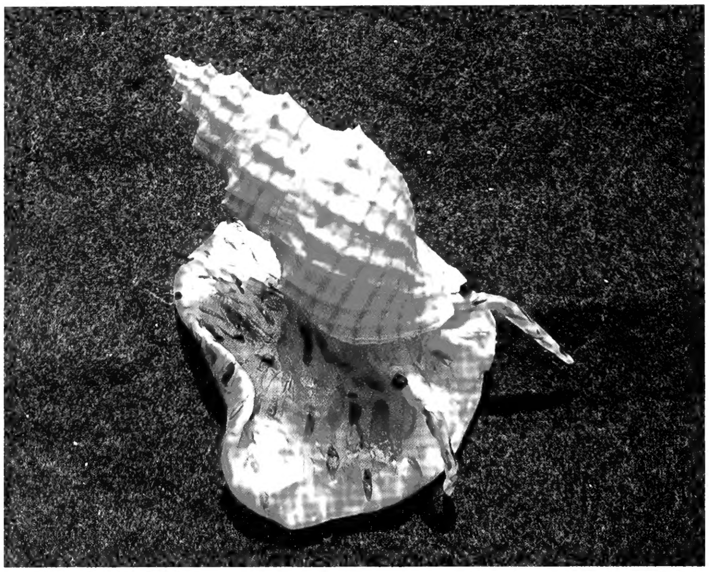


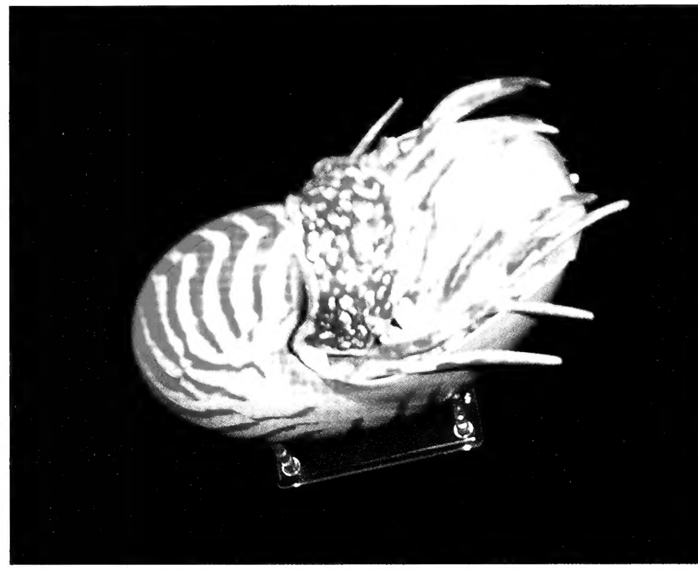
Above: *Charonia variegata* (Lamarck, 1816), the Atlantic triton trumpet, Bobbi's first model of a living mollusk. Below: *Fasciolaria tulipa* (Linnaeus, 1758), the true tulip, with a body plan similar to the triton trumpet. Note the operculum. Photos by the author.



When the exhibit was presented to the public at the next local shell show, several experts informed me that my animal bodies were too flat. While snorkeling the next year in the Bahamas, I kept an eye out for the animals in their natural habitat. I noticed some lifted their bodies quite high and some undulated their body as they crawled, presenting a wavy motion. I have continued to keep an eye on the various living mollusks when I can and I try to note every detail, including color and shape. It has been fascinating and quite a learning process for me.

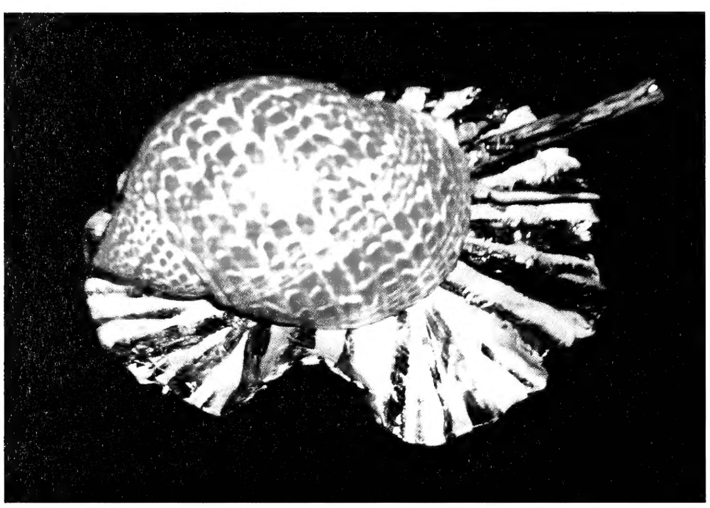
The next exhibit we worked on together was "All the Shores I've Known Before." This exhibit included self-collected shells from the Caribbean, Californian, Panamic, and Indo-Pacific regions. For this exhibit I made Cooper's nutmeg (*Cancellaria cooperi*), Pacific tun, (*Tonna perdix*), Atlantic tun, (*Tonna maculosa*), and striate cone (*Conus striatus*). The tun shell animals were particularly fascinating and beautiful.

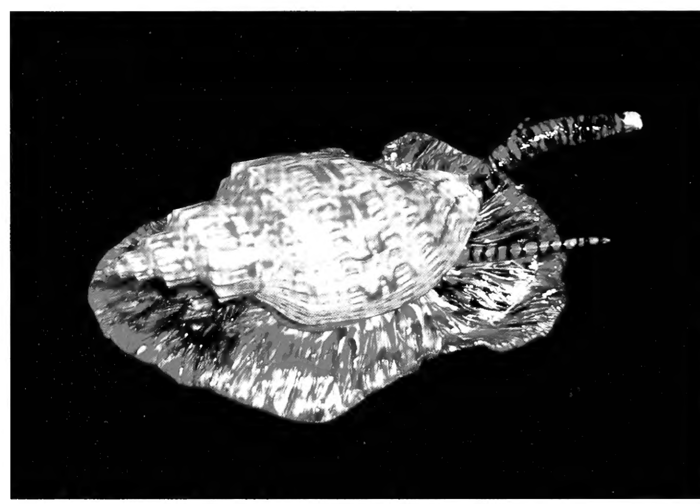




Above: *Cancellaria cooperi* Gabb, 1865 (Cooper's nutmeg). Below: *Tonna perdix* (Linnaeus, 1758) (Pacific partridge tun).

Above: *Nautilus pompilius* Linnaeus, 1758 (chambered nautilus). Below: *Festilyria duponti* Weaver, 1968 (Dupont's volute).



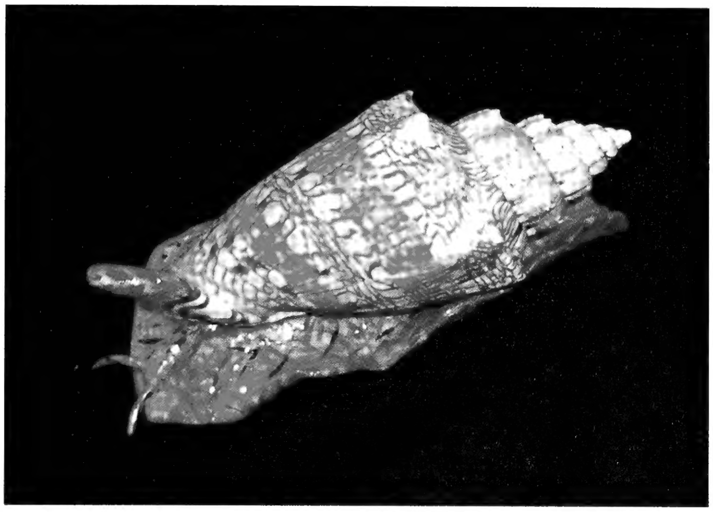


As other exhibitors saw my models they asked about them and I was soon being asked to make animals for their exhibits. I was glad to help make their exhibits more interesting. Jim is a volute collector and trades for all of his shells with self collected Caribbbean specimens. Our collection includes all self-collected or traded shells; we have never bought a shell. He acquired a Dupont's volute (*Festilyria duponti*) to add to his collection and decided it would be nice to exhibit it with the animal model. The animal for this shell is one of the most beautiful I have seen, with stripes of red, brown, and black. He received many nice awards for this shell display.

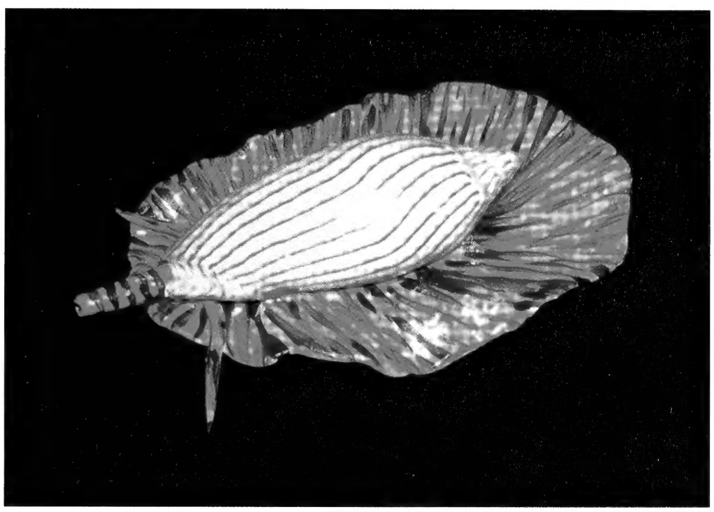
Debra Ingrao from the Mote Aquarium in Sarasota, Florida, saw my animal models and was fascinated. She contacted me about making some models to display at the aquarium. With photos she provided, I completed several models and hand delivered them to her, as they are quite fragile. By this time I was using wire in the tentacles and eye stalks to give them more stability.

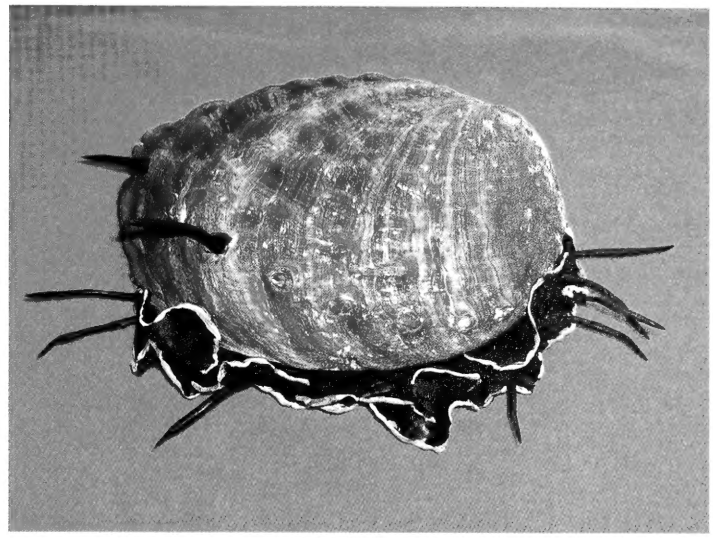
At the COA Convention in Orlando near Disney World, I had three nice specimens of *Charonia variegata* and displayed each with an animal model on my bourse table. They sold within two hours after the opening of the bourse. That got me excited about making more of them, and at the COA Convention in Sarasota I went all out. I prepared for a year to have two tables full of my living seashell models. Since I seemed to be the only one doing them, I figured they would go over well. I also knew this would be the only place to sell them. They would not sell to the general public at a shell show as they were too specialized for the general public.

I sold several of the models, including about a dozen to Jack Lightbourn for his new exhibit at the museum in Bermuda. He could not take the shells with him so we boxed them all up with his name on them and kept them until his next trip to the USA. He called me one evening to tell me he would be coming to town and wanted to pick up the animals and also take us out for dinner. I packed his models in Styrofoam boxes with the tentacles and eyestalks carefully wrapped in cotton. They were then surrounded with Styrofoam "peanuts" and packed in boxes and suitcases for the return trip. The most difficult shell to pack for transport was the chambered nautilus (*Nautilus pompilius*). Jack called me soon after his return to the Bahamas to ask me what kind of glue to use

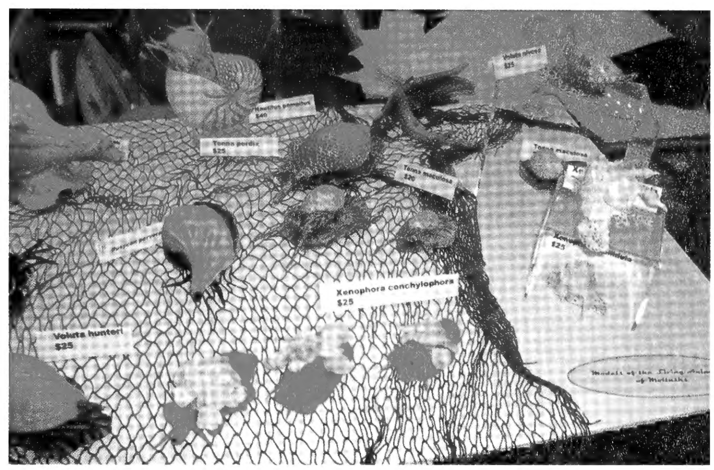


Above: *Voluta ebraea* Linnaeus, 1758 (Hebrew volute). Below: *Amoria ellioti* (Sowerby, 1864) (Elliot's volute).





Above: *Haliotis rufescens* Swainson, 1822 (red abalone). Below: Bobbi's table at a recent COA convention.




for a bit of shipping damage repair. I assured him that 527 in a tube was the best; I have used it often!

At the COA Convention at Port Canaveral, an exhibit of single specimens was part of the convention. Jim exhibited his *Festilyria duponti* with the living animal model. Patrick Anseeuw from Belgium saw the model and discussed with Jim the possibility of my making a model of a slit shell (*Pleurotomaria hirasei*). Patrick sent me a photo of the animal and I went to work. He made arrangements for Donald Dan to take the model to Belgium for their show the following year. Unfortunately, that show followed September 11th and Donald was unable to attend because the airports were closed. So we finally decided to mail the model. Some of the tentacles ended up broken, but I informed Peter to use 527 glue and all would be well. I also promised him the next time he came to the USA that I would replace the model if he could hand-carry it home.

As the word spread about my models, I frequently received phone calls or e-mails asking for specific animal models. For such requests I suggest sending me the shell and a colored photo of the animal. I have cataloged in my computer an alphabetical list of animal photos from our personal shell library with the name of the book and page number so I can easily find the relevant photos. I have had several people send me their personal photos to use.

In 2004 our 65-foot exhibit of the family Volutidae culminated a year's worth of work. The wonderful *Festilyria duponti* was included in this exhibit along with a Hebrew volute, (*Voluta ebraea*) and an Elliot's volute (*Amoria ellioti*).

This year the Suncoast Conchologists contacted me about their display in the Clearwater Aquarium. They sponsor an exhibit of local shells. They sent me 10 local Florida shells and I am now working on the models. I will be eager to see the completed exhibit of our local mulluscan fauna.

It has been wonderful to be able to contribute toward the on-going education of the public through my live animal models. It is also an aspect of conchology that seems to have taken over my home and much of my time!

# 36th Annual Banana Slug Derby

**by**
**Dan Yoshimoto**

ARIONIDAE
*Ariolimax columbianus columbianus*
(Gould in Binney, 1851)
Prairie Creek State Park, Humboldt Co., California
N41° 21.830' W124° 01.363'
Under Redwood Trees, in leaf litter,
In great abundance, LIVE
Yoshimoto 8/21/2004

The dataslip above would have been my tag for collecting the famous (or infamous) yellow banana slug, found in northern California, if I had collected one, but there was something else going on that now attracted my attention. There were sounds of a bagpipe, screaming fire truck sirens, and giggles of children approaching. I stopped under a grove of redwoods to see what the excitement was all about.

A parade approached through a misty fog and I spied a number of yellow-draped people of all ages. Atop the fire truck sat a family with golden ribbons in their hair, and they were followed by a group of official sheriff's vehicles, after which came a group of park rangers.

I was sure that I hadn't done anything, like collecting in a state park that deserved an entire team of armed men to come and take me away. No, there were no banana slugs in my backpack, and I hadn't picked up any eagle feathers, so it must be something else.

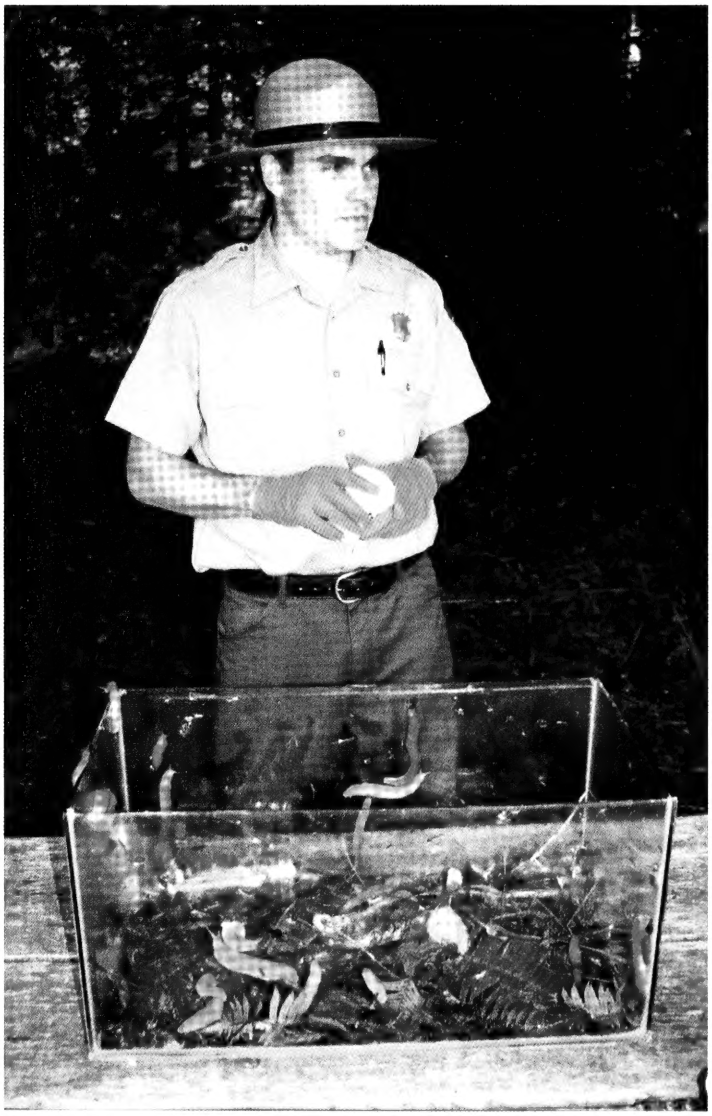
The "parade" passed me by (whew!) and kept on going down the road to a small clearing in the damp forest, an area that had a few benches and a roped off arena for something.

"Are you coming or not?" asked one of the rangers. To my quizzical look he added, "To the 36th Annual Banana Slug Derby."

Feeling a bit relieved I was not going to be interrogated or searched, I followed the crowd to the small opening in the quiet forest and settled in to enjoy the rest of the afternoon. Sitting down on a small rock and noticing the children brought back many memories of when, as a child, I too participated in silly events like this. It was a good feeling.

After dismounting from the fire engine, the curly beribboned couple led the parade to the arena, where the slimy creatures were to be raced. Three red and green "race tracks" had been set up for the event and were being cleaned and soaked down for the competition, as the ranger/announcer read off the instructions for the contestants.

"No slug may leave the center ring until the starting signal. The first slug to touch the outer ring is the winner; they do not have to cross it."



**A park ranger with his supply of banana slugs, ready to race!**

The contestants await the starter's whistle.

Before starting the races, the Banana Slug Anthem was sung by the fans,

"Out on the duff
down beneath the ferns and redwood
just north of Orick
at a place called Prairie Creek
There every August resounds the celebration.
Hail to the Slug!
All hail the great J.T.!!!"

What's a J.T.?

The racing slugs are urged on by providing shade.

The park rangers gathered the slugs earlier in the day and would return them to their homes later that afternoon. They were now being passed out to all those racing slug jockeys who were to be participating today.

"Choose your slug! Big ones, small ones, your choice!" Out they came, from a terrarium furnished by the rangers. Swarming children came and placed their slimy creatures in their cup "stalls" and hurried off to reach the waiting lines of other jockeys.

Six jockeys at a "track," times three "tracks," leaves us with 18 jockeys at a time. Racing rules were read by the announcer, who admonished the jockeys that they must be in control of their slugs at all times and that there would be no drugs tolerated by the contestants.

Above: the winning slug touches the finish line and can now return to its home in the forest. Below: a ceremony for the winner concludes this year's festivities.

With the high shrill of a whistle, the slugs slide "quickly" (3 inches a minute by my watch) across the red and green track, following their jockey's lead to the cheers of family and friends in the audience. One could easily tell who had, and who had not, participated in an event like this before, as the "veteran jockeys" didn't scream and yell. Instead they slowly lifted their hands to make shade for their "steeds" that obligingly headed straight into the newly created shadow.

As each slug vied for "gold," it was a race of the fittest. At the final moment, "Speedy" passed his rhinophore across the goal line and became the winner of the 36th Annual Prairie Creek State Park Banana Slug Derby. The winning contestant was awarded a B.S. Redwood Trophy. Yes, B.S. stands for banana slug.

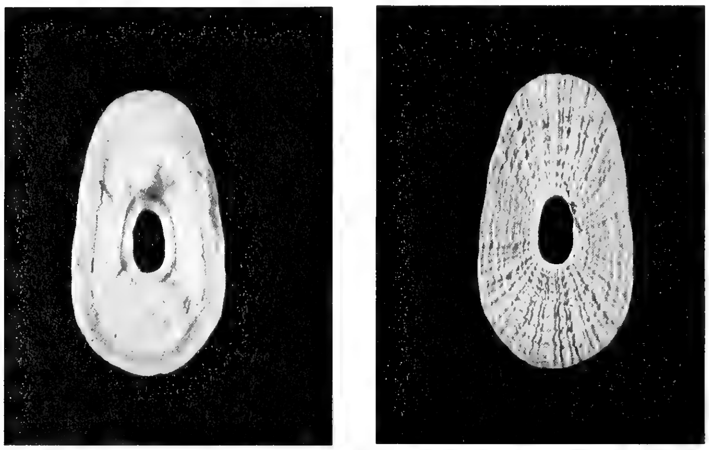
As the afternoon faded into early evening, on the highway back home in Eureka, I thought of the faces of the children who, with their parents or grandparents, had become once again a part of the culture that is Humboldt County, California. I, as an observer, came away with a new understanding of what it means to enjoy such simple pleasures.

Dan, Hiromi & Kuma Yoshimoto
1164 Vista Dr., Eureka, California, 95503-6018
U.S.A.

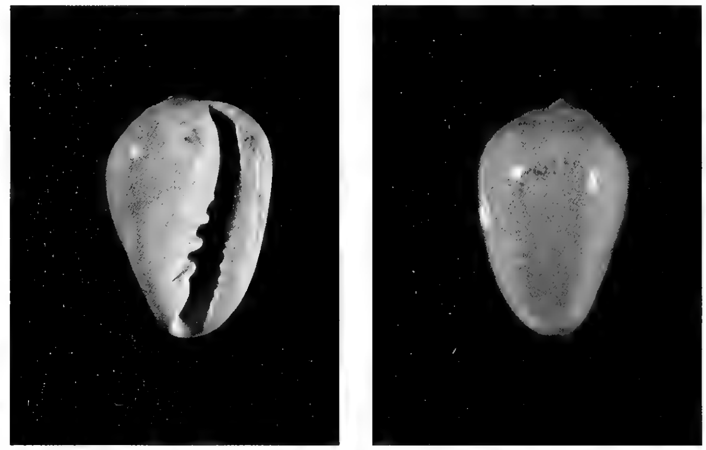
# Florida Fossils-2

## by Kevan and Linda Sunderland

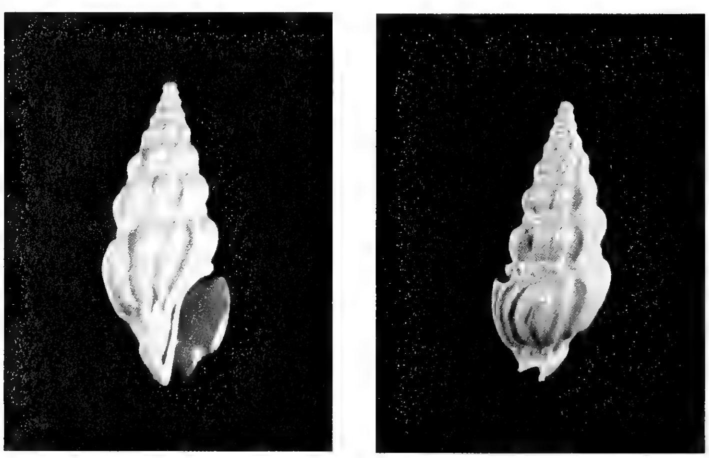
**Specimens illustrated are from the collection of Richard Duerr & Phyllis Diegel (as were the specimens in part 1, which were incorrectly listed as coming from the collection of Kevan & Linda Sunderland). Photographs by Kevan & Linda Sunderland, 9370 NW 39th Street, Sunrise, FL 33351 email: KLShells@mindspring.com**



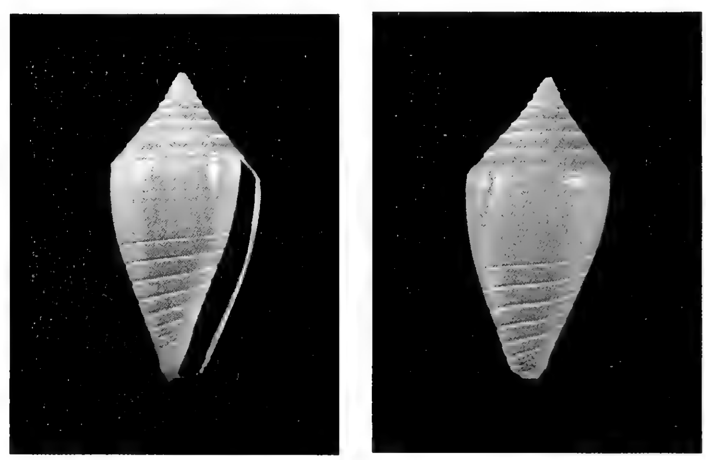
*Diodora talanteia* Olsson & Harbison, 1953, 23mm.



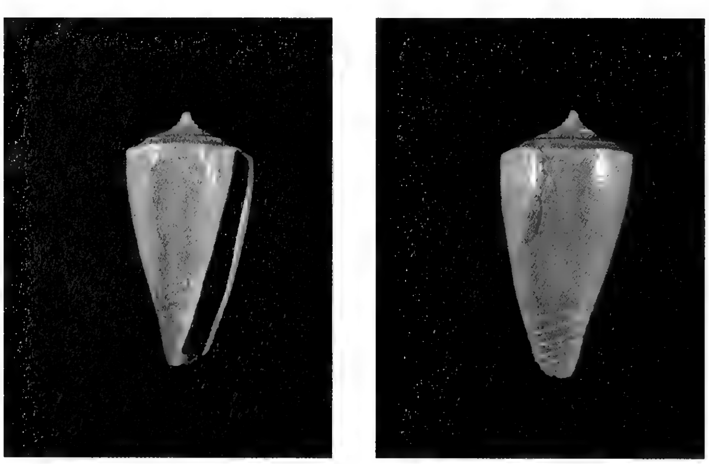
*Marginella precursor* Dall, 1890, 16 mm.



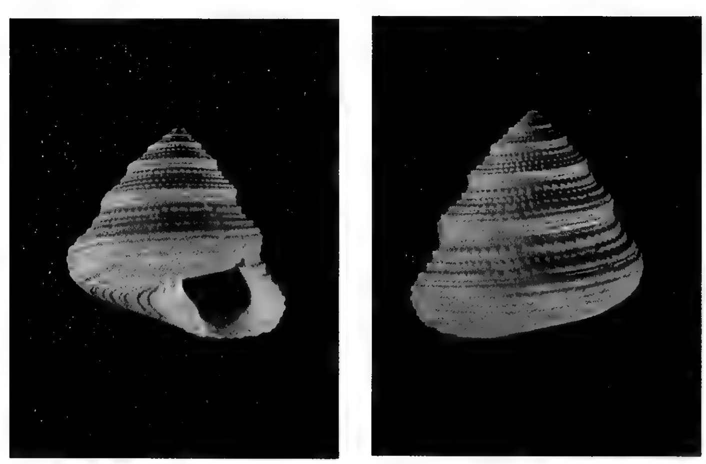
*Cymatosyrinx lunata* (H. Lea, 1843), 22mm.



*Conus marylandicus* Green, 1830, 30mm.

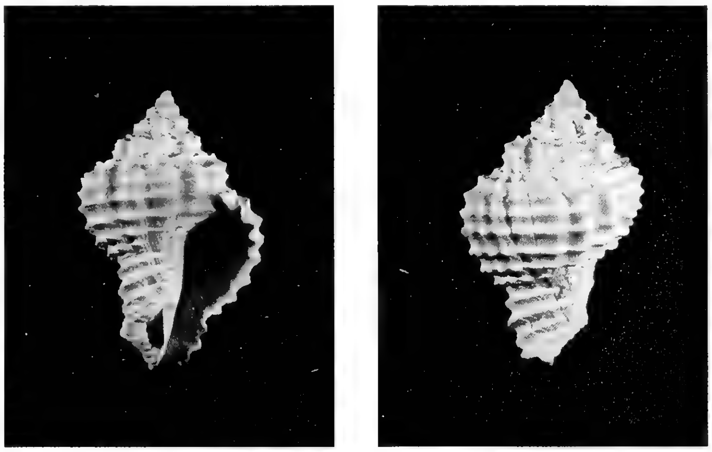


*Conus harbisonae* Petuch, 1994, 18mm.

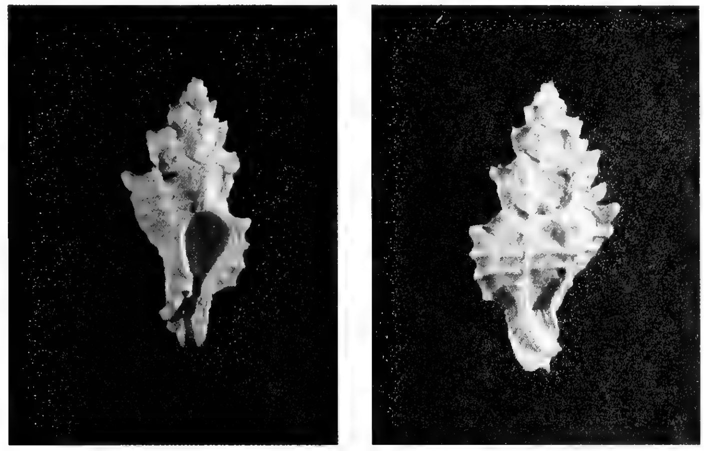


*Calliostoma willcoxianum* Dall, 1892, 12mm.

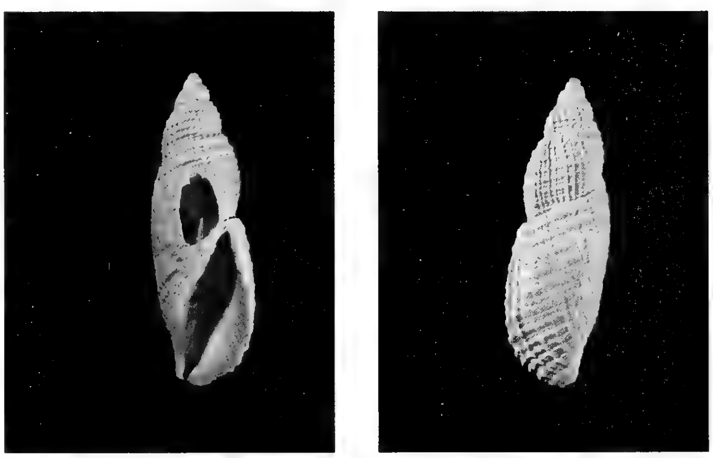
Dall, W.H. 1890-1903. "Contributions to the Tertiary fauna of Florida with especial reference to the Miocene Silex Beds of Tampa and the Pliocene Beds of the Caloosahatchee River." *Transactions of the Wagner Free Institute of Science of Philadelphia*, 3, 1-6: 1654pp., 60pls.
Heilprin, A. 1886. "Explorations on the west coast of Florida and in the Okeechobee wilderness." *Transactions of the Wagner Free Institute of Science of Philadelphia*, 1: VII + 371-506, pls1-19.
Olsson, A. A. and Harbison, A. 1953. "Pliocene Mollusca of southern Florida." *Academy of Natural Sciences of Philadelphia*, 8: V + 457pp, 65 pls.
Petuch, E. J. 1994. *Atlas of Florida fossil shells.* Chicago Spectrum Press, 394 pp.
Waller, T. R. 1969. "The evolution of the *Argopecten gibbus* stock (Mollusca: Bivalvia) with emphasis on the Tertiary and Quaternary species of eastern North America." *Journal of Paleontology*, 43: V + 125 pp.



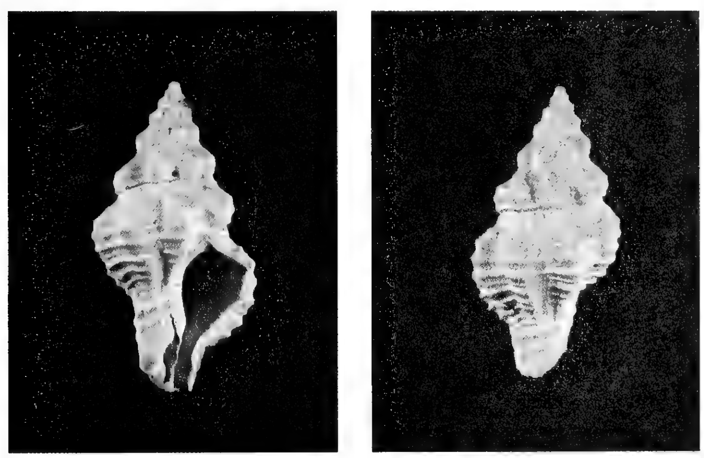
*Solenosteira mengeana* Dall, 1890, 20mm.



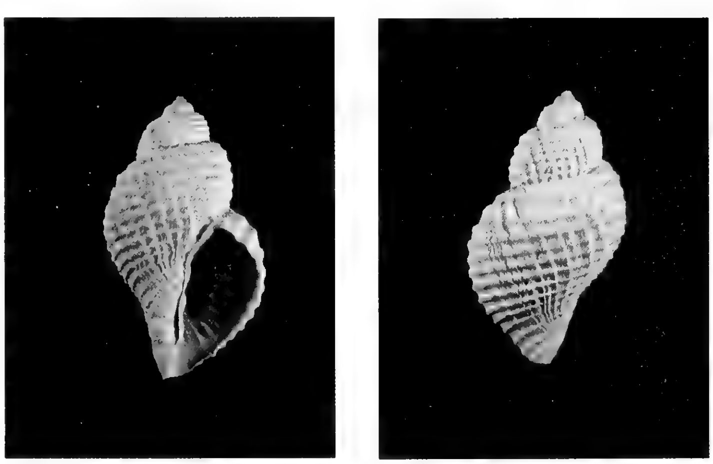
*Dermomurex alabastrum* (A. Adams, 1864), 16mm.



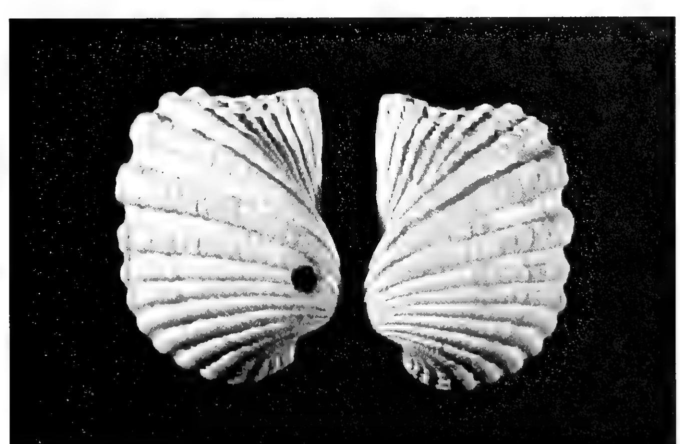
*Perplicaria perplexa* Dall, 1890, 21mm.



*Calotrophon attenuatus* (Dall, 1890), 21mm.



*Massyla venusta* (Toumey & Holmes, 1856), 23mm.



*Anadara crassicosta* (Heilprin, 1886), 28mm.

# NEW JERSEY *EPITONIUM* CONTINUED...

**by Judy-Lynn Goldberg and Robert Robertson**
**Academy of Natural Sciences of Philadelphia**

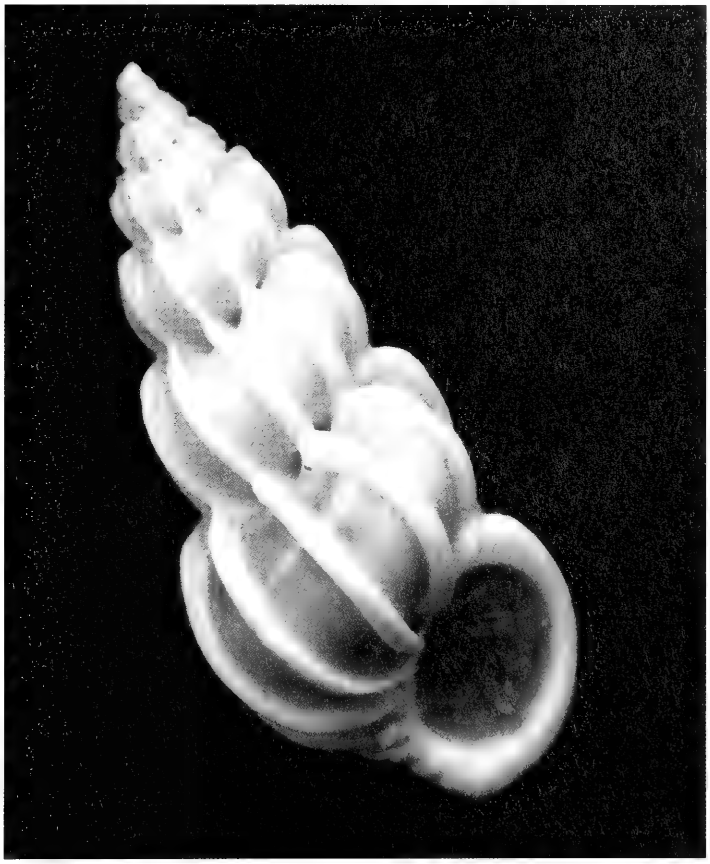
Animals sometimes are recorded in unusually large numbers at some particular place, but fluctuations or temporary absences of a species are less often recorded quantitatively. In American Conchologist, June 2001, 29(2): 20-21, we reported that *Epitonium* shells had been remarkably numerous for at least several years on the outer sand beach in and near Ocean City, Cape May County, southeastern New Jersey. Since 2001, New Jersey epitoniids have become remarkably less numerous. Before and after this, sporadic visits to other outer New Jersey beaches yielded hardly any *Epitonium.* Early on, we collected a few *E. humpreysii* (Kiener, 1838) at Sea Isle City and Wildwood Crest (both also in Cape May County). Thus the heaviest concentration of *Epitonium* was, and perhaps still is, the Ocean City area, southeastern New Jersey.

Originally, we found six species on the Ocean City beach, with *E. humphreysii* by far the most abundant and the only one having a few still living animals washed ashore. This is the only species of *Epitonium* in this area with white shells that after death turn shades of light to dark gray. This perhaps is an indication of post mortem age or burial. Living animals all had white shells. The species we recorded in 2001 as *E. candeanum* (d'Orbigny, 1842?) is actually *E. championi* Clench & Turner, 1952, which ranges from Massachusetts to the Carolinas. True *E. candeanum* is known no farther north than Bermuda and southern Florida, far south of New Jersey.

After 2001, Goldberg has continued to search for *Epitonium* in Ocean City, from the 23rd St. beach to near 46th St. Collections made through October 2004 (six species) now total 3171 shells. These were obtained over nine years including some brief times of irregular collecting beginning in early July 1996. Regular, intensive collecting resumed in late March 2001 (total shells by then: 1838) and continued thereafter during most weekends until the present, although in 2004 collecting again became irregular until October 20, when the counts recorded were stopped and updated. The two highest total numbers collected in any two of the nine years was 715 in 2000 and 777 in 2001. This included 196 in April 2001. In 2002 the total was 244, in 2003 it was 340, and in 2004 it was 91, to date, far fewer than in any of the previous years, including even the few part-years. Despite this, 50 were collected on 3 January 2004, but none again until April 2004. No specimens were obtained in February, March, July, or October 2004. The winters of 2003 and 2004 (January through March) were very cold, wet and stormy, and sampling weekends were fewer in 2004. A friend helped to monitor the beach for *Epitonium* on many weekends when Goldberg was absent. The friend confirmed the trend we report.

*E. humphreysii* has always been the most abundant of the six species found in this area. The hierarchy of ratios of numbers of each species-pair present remained fairly constant. These consistent co-occurrences and ratios of six sympatric congeners in one area are remarkable. Our now largest shell of *E. humphreysii* is 24mm long, longer than any known previously.

The total numbers of these six *Epitonium* species that wash up on the shore fluctuate greatly from year to year (or over much shorter times), and the occurrences of the few living animals do not run in parallel with those of the many empty shells. We think it likely that inshore physical oceanographic conditions (particularly currents and wave action) cause this variation, but biological factors are also possible. We have noted that sometimes, and only in some places on the beach, there is an intertidal trough inside a long offshore sandbar. When this occurs, the *Epitonium* are found as the tide is receding, on the landside of the trough. The epitoniids, along with other small shells and shell fragments, are in the grunge in fresh wash lines. These lines vary longitudinally or transversely in placement and width. The new data do not confirm the earlier suggested higher abundances in February or March, or breeding and living animals mainly in February to April. No living animals of any of the six species were found at all after June 2001, and their habitats, foods, and life cycles off Ocean City beach remain unknown. The aquarium-laid egg "cases" of *E. humphreysii* from Captiva Island, Florida, have been illustrated (see Goldberg & Robertson, 2001). The ages of the empty New Jersey shells and their times or depths buried vs. their shades of gray are also of interest, but these too are unknown.



*Epitonium humphreysii* (Kiener, 1838), 17mm, in sand at low tide off Sanibel Island, Florida, 1994.

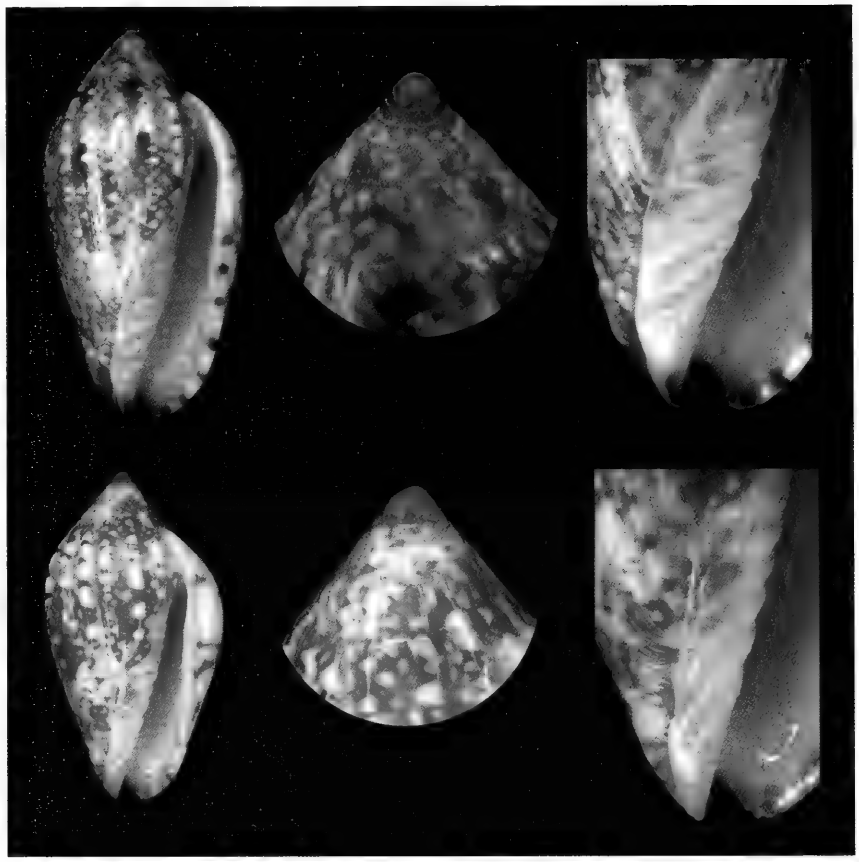
# Brazilian Volutidae

by

José Coltro (images by Carlos Hencke)

A favorite family with many collectors, Volutidae is well represented along the Brazilian coast by many endemic species. Brazil has an extremely long coast with large variations in weather and differing sea current influences. The volutes found along this area vary from truly tropical to sub-temperate species.

Starting in the extreme south are found Magellanic species, many belonging to the genus *Adelomelon*, such *A. ancilla, A. beckii* and *A. riosi*. These species are also found in Uruguay and Argentina. *Adelomelon ancilla* (Lightfoot, 1786) is an elongate species reaching 200mm that is found off Rio Grande do Sul State and is commercially sold in Argentina. I even saw cans of this species on markets in Chinatown in New York City! The extremely rare form *Adelomelon ancilla martensi* (Strebel, 1906) is also found in southern Brazil. The largest species of volute found in the waters off Brazil is *Adelomelon beckii* (Broderip, 1836). It can reach almost 500mm! There are two subspecies; the nominate one is more elongate and is found in the northern range of the species from offshore São Paulo to Espirito Santo. The other subspecies is *Adelomelon beckii indigestus* von Ihering, 1908, and has a shorter spire and a very heavy structure. It is found in the southern partion of the range from southern Brazil to Argentina. It is a very impressive species. *Adelomelon riosi* Clench, 1964 (named after Prof. E.C. Rios), was for many years considered an endemic species, but recently specimens were discovered in the waters off Argentina. It is an uncommon species that lives only in deep water on a mud bottom. It is difficult to find in good condition. Some specimens may reach 375mm.



**Top row: *Plicoliva zelindae* (Petuch, 1979) - 36mm, Abrolhos Archipelago, Bahia State. Also shown are details of the apex and columella structure. Bottom row: *Plicoliva* "*oceanica*" - 19.8mm, offshore reef, Abrolhos Archi-**

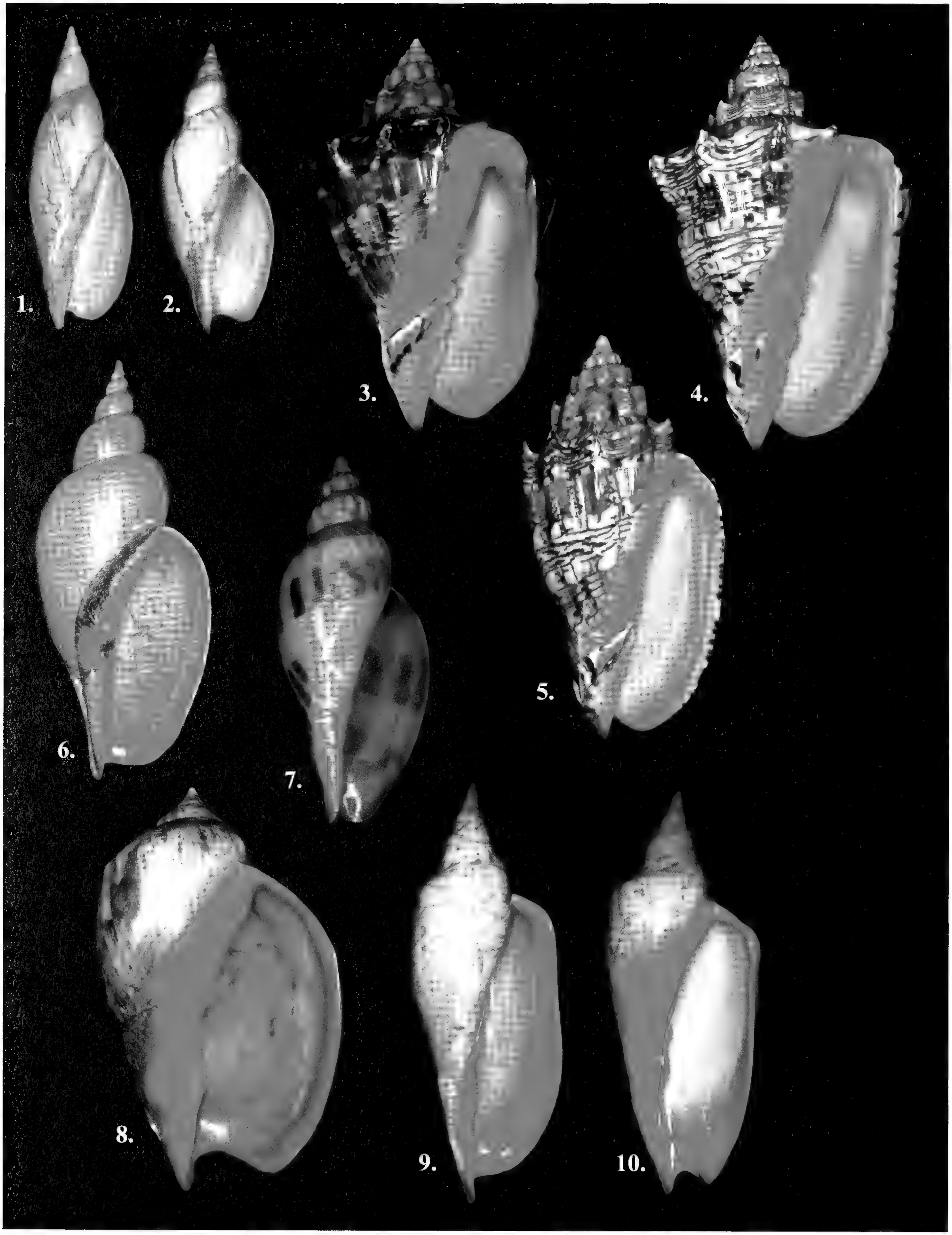
*Pachycymbiola brasiliana* (Lamarck, 1811) is a heavy species found primarily along the Rio Grande do Sul coast. It occurs from Argentina up to Rio de Janeiro, where is very rare. This species lives at depths between 10 to 50 meters in the southern portion of its range, but in the northern portion it lives at depths of up to 250 meters! Some specimens reach 200mm.

*Minicymbiola corderoi* (Carcelles, 1953) is a small species (up to 28mm) and was initially considered a marginellid before being placed within the Volutidae. Recently we obtained some live specimens and found it to have a very beautiful shell and animal. The animal is unbelievably bright pink.

Dr. José H. Leal described many new species recently in southern Brazil. He and Philippe Bouchet, from the Paris Museum, described the large and beautiful *Odontocymbiola simulatrix* Leal & Bouchet, 1989, an ornamented species found along Santa Catarina State up to Rio de Janeiro. This species can reach 330mm and lives at depths of 400-600 meters. Until 1990 there were just five known specimens. Two other species described by Leal and Bouchet are: *Nanomelon viperinus* Leal & Bouchet, 1989, and *Tractolyra tenebrosa* Leal & Bouchet, 1989. All are from southern Brazil. *N. viperinus* is a deep-water species restricted to Rio Grande do Sul up to São Paulo. The living animal has a beautiful creamy-white granulated shell. It is quite rare. Recently we obtained a 49mm specimen, but it is normally found at 30-35mm. *T. tenebrosum* is probably our rarest volute. Very few were found, and most of these were dead and broken (all type specimens). It is not a large species, only 38 to 51mm. Recently a research boat found one alive offshore São Paulo State at a depth of 3,200 meters!

Dr. Leal and Prof. Rios described a deep-water volute, *Nanomelon vossi* Leal & Rios, 1990, that is similar to *N. viperinus*, but has a larger apex and a different rib structure. The shell is very granulated and reaches 35mm. It is another extremely rare species found only off Rio Grande do Sul.

Left: *Adelomelon beckii indigestus* von Ihering, 1908 - 382mm, off Rio Grande, Rio Grande do Sul State. This is a heavier and more robust subspecies found in the southern portion of the range to Argentina.
Right: *Adelomelon beckii beckii* (Broderip, 1836) - 398mm, off Santos, São Paulo State. It is elongate and more colorful than its southern cousin.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*Zidona dufresnei* is a very nice and quite variable species that occurs from southern Argentina up to central Brazil. It is the only commercial species of volute found in our local markets. The animals often attach sand to the apex, building up an unusual nacreous structure that can extend in a horn- or knife-like shape up to 35mm! Found at depths of 150-200 meters, this species can be up to 300mm long! The form *Zidona dufresnei disctincta* (Lahille, 1895) has a beautiful orange aperture, and it is a very heavy shell.

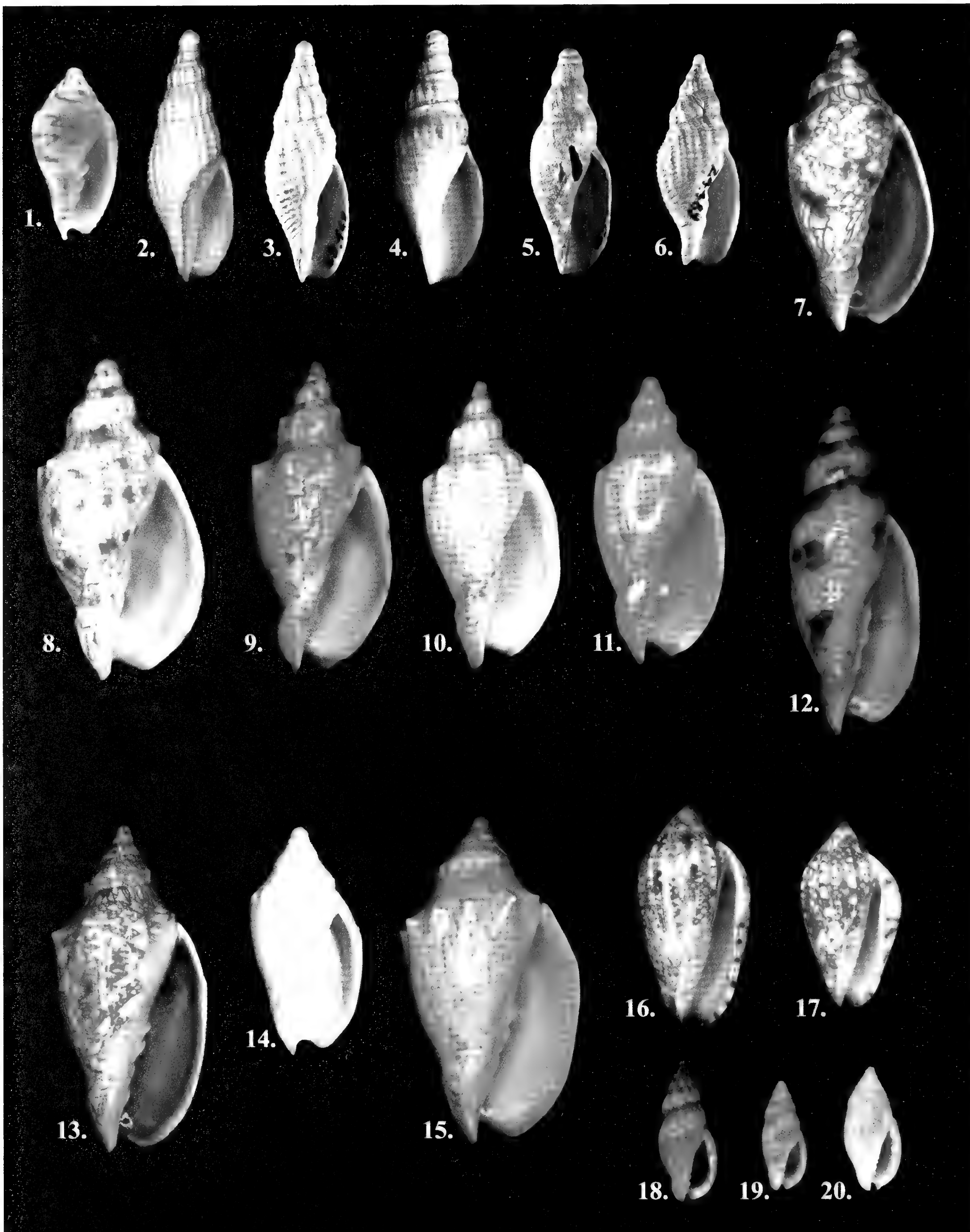
Off central Brazil, in an area that is now considered a new malacological province called Paulista, we are able to find four *Odontocymbiola*: *O. cleryana, O. americana, O. macaensis*, and *O. saotomensis*. *Odontocymbiola cleryana* (Petit, 1856) was considered a synonym of *Odontocymbiola americana* (Reeve, 1856) for more than 100 years. Both species were described in the same year, with only a few months between the papers. Along with Dr.Yara Swoboda Calvo, I recently demonstrated they are separate and distinct species. *O. cleryana* is a southerly ranging species and is more globose with small nodules on the columella. The radula and anatomy are also quite distinct. It is a shallow water species and is found from southern Rio de Janeiro and São Paulo. It is a medium sized and quite variable shell, reaching 60mm. *O. americana* is restricted to Espirito Santo State. It is elongated, very colorful and quite variable. It is one of our most beautiful species. Sometimes it is possible to find albino or completely pink specimens. The largest specimen found was 75mm long.

Dr. Calvo and I described *O. macaensis* and *O. saotomensis* in the same paper that demonstrated the validity of *O. cleryana*. Although Dr. Patrice Bail considered them subspecies of *O. americana*, all three are now considered full species based upon differences in anatomy and shell morphology. *Odontocymbiola macaensis* Calvo & Coltro, 1997, is a deep water species typically found off Rio de Janeiro. Recently some deep-water specimens (300-400 meters) were found off Santa Catarina State. It is the most elongate of the group, with a very large apex and strong plicae on the columella. It sometimes reaches 75mm. *Odontocymbiola saotomensis* Calvo & Coltro, 1997, is a beautiful species that is reminiscent of some Australian species. It is a fat shell and variable in both color and pattern. It is limited to the shallow waters off the Cape of São Tomé, Rio de Janeiro State. Like *O. americana*, it is possible to find both albino and orange specimens. It is the largest of the group with sizes over 80mm.

Going north, the volutes start to become rare and only few species are found. The principal volute from middle Brazil north is *Plicoliva zelindae* (Petuch, 1979). Dr. E. Petuch described this species originally as an olivid based on an immature specimen. Later finds of mature specimens confirmed this as a volute and not an olive. It is a variable species and lives on reefs off southern Bahia State. It is a shallow-water species and is sometimes found

Left (page 22):
1. *Adelomelon ancilla ancilla* (Lightfoot, 1786) - 147mm, off Cabo de Santa Marta, Santa Catarina State.
2. *Adelomelon ancilla martensi* (Strebel, 1906) - 133mm, off Rio Grande, Rio Grande do Sul State.
3. *Voluta ebraea* Linnaeus, 1758 - 198mm, off Natal, Rio Grande do Norte State.
4. *Voluta ebraea* Linnaeus, 1758 - 176mm, off Fortaleza, Ceará State.
5. *Voluta ebraea* Linnaeus, 1758 - 223mm, off Natal, Rio Grande do Norte State.
6. *Adelomelon riosi* Clench, 1964 - 248mm, off Cabo de Santa Marta, Santa Catarina State.
7. *Odontocymbiola simulatrix* Leal & Bouchet, 1989 - 178mm, off Cabo de Santa Marta, Santa Catarina State.
8. *Pachycymbiola brasiliana* (Lamarck, 1811) - 198mm, off Rio Grande, Rio Grande do Sul State.
9. *Zidona dufresnei* dufresnei (Donovan, 1823) - 230mm, off Rio de Janeiro.
10. *Zidona dufresnei disctincta* (Lahille, 1895) - 198mm, off Cabo de Santa Marta, Santa Catarina State.

Overleaf (page 24):
1. *Minicymbiola corderoi* (Carcelles, 1953) - 25.5mm, off Cabo de Santa Marta, Santa Catarina State.
2. *Nanomelon viperinus* Leal & Bouchet, 1989 - 44mm, off Santos, São Paulo State.
3. *Nanomelon viperinus* Leal & Bouchet, 1989 (HOLOTYPE), MORG 25.469, 44.2mm, off Rio de Janeiro. (Photo: Dr. P.M. Santos Costa).
4. *Tractolyra tenebrosum* Leal & Bouchet, 1989 - 42mm, off Macaé, Rio de Janeiro State. (Photo: Dr. P.M. Santos Costa).
5. *Tractolyra tenebrosum* Leal & Bouchet, 1989 (HOLOTYPE), MORG 25.468, 38.3mm, off Rio de Janeiro. (Photo: Dr.P.M.Santos Costa).
6. *Nanomelon vossi* Leal & Rios, 1990 (HOLOTYPE) 29.489, 35.1mm, off Rio Grande, Rio Grande do Sul State. (Photo: Dr.P.M.Santos Costa).
7. *Odontocymbiola cleryana* (Petit, 1856) - 51mm, off Rio de Janeiro.
8. *Odontocymbiola cleryana* (Petit, 1856) - 52.7mm, off Santos, São Paulo State.
9. *Odontocymbiola americana* (Reeve, 1846) - 52mm, off Vitória, Espirito Santo State.
10. *Odontocymbiola americana* (Reeve, 1846) - Albino, 47.2mm, off Vitória, Espirito Santo State.
11. *Odontocymbiola americana* (Reeve, 1846) - Orange form, 42.8mm, off Vitória, Espirito Santo State.
12. *Odontocymbiola macaensis* Calvo & Coltro, 1997 - 66.4mm, off Macaé, Rio de Janeiro State.
13. *Odontocymbiola saotomensis* Calvo & Coltro, 1997 - 68mm, off Cabo de São Tomé, Rio de Janeiro State.
14. *Odontocymbiola saotomensis* Calvo & Coltro, 1997 - Albino, 39.9mm, off Cabo de São Tomé, Rio de Janeiro State.
15. *Odontocymbiola saotomensis* Calvo & Coltro, 1997 - Orange form, 70.2mm, off Cabo de São Tomé, Rio de Janeiro State.
16. *Plicoliva zelindae* (Petuch, 1979) - 36mm, Abrolhos Archipelago, Bahia State.
17. *Plicoliva "oceanica"* - 19.8mm, offshore reef off Abrolhos Archipelago, Bahia State.
18. *Enaeta leonardhilli* Petuch, 1982 - 14mm, Fernando de Noronha Island.
19. *Enaeta* sp. a. - 10.5mm, offshore reef off Abrolhos Archipelago, Bahia State.
20. *Enaeta* sp. b. - 13.4mm, off Natal, Rio Grande do Norte State.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in tide pools. Large specimens reach 45mm. There is a variation I call *Plicoliva* "*oceanica*" found in far offshore reefs in deep water. It is closer in appearance to the West African species *Plicoliva ryalli* Bouchet, 1898. The principal differences between *P. zelindae* and *P.* "*oceanica*" include a shorter spire on *P.* "*oceanica*" and a columella with five plicae (one obsolete), while *P. zelindae* has four plicae (one obsolete). There are other structural differences as well as differences in pattern and color. *P. zelindae* is a shallow-water species found in reefs near the coast, while *P. oceanica* lives on a very restricted reef (70km east of Abrolhos Archipelago) and in deeper water, about 20-40 meters. The Museum of Zoology of the University of São Paulo is researching the anatomy of this possible new species.

In the same area where *P.* "*oceanica*" is found, a new and as yet unnamed *Enaeta* has also been discovered (sp. a.). It seems to be related to *Enaeta guildingii* (Sowerby, 1844) from the Caribbean. This is a small shell of only 10mm. It is possible to find *Enaeta leonardhilli* Petuch, 1982, on the island of Fernando de Noronha. This small species (the largest found was only 15mm) is found under rocks in tide pools. It is considered a form of *Enaeta guildingii* by some authors, but is a distinct species, endemic to Fernando de Noronha. It is extremely variable and some completely black specimens have been found. The final *Enaeta* species is found off Rio Grande do Norte. It is another undescribed species (sp. b.), related to *E. cylleniformis* (Sowerby, 1844). It is a globose shell of about 13mm. Dr. Paulo M.S. Costa from our National Museum of Rio de Janeiro is studying this species.

Last but far from least, in northeast Brazil we find what I call the mother of all volutes, *Voluta ebraea* Linnaeus, 1758, the type for the genus *Voluta.* This beautiful species is found from northern Bahia State up to Maranhao State. Perhaps the most beautiful specimens are found offshore of Rio Grande do Norte State. They are very colorful and large, and have perhaps the best developed "knobby" structure. The largest specimen ever found was 240mm. *V. ebraea* from the waters off Maranhao looks very different. It is more globose and sometimes lacks shoulder knobs. This form is found in areas where the bottom is muddy. At present there are efforts underway to list *Voluta ebraea* on the CITES list. In some areas where it was once abundant it is now almost impossible to find. The reason for the decline of this fabulous Brazilian volute is unknown. Of the many beautiful Brazilian volutes, I believe this is our finest example of this varied family.

Reference:

**Calvo, Y.S. & Coltro, J.** 1997. Studies on *Odontocymbiola americana* (Reeve, 1856) (Mollusca, Gastropoda: Volutidae), with a rediscovery of *Odontocymbiola cleryana* (Petit de la Saussaye, 1856) and descriptions of two new species, *Vita Marina* 44 (3-4): 21-38.

José Coltro
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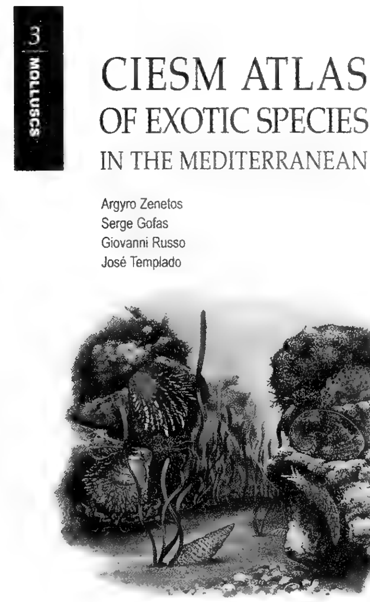
Worldwide Specimen Shells
www.femorale.com.br

# Book Review: CIESM Atlas of Exotic Species in the Mediterranean

**By Argyro Zenetos, Serge Gofas, Giovanni Russo, José Templado. Frédéric Briand, Editor.**

Published 2003, pp. 376. CIESM, 16, bd de Suisse, MC 98000, Monaco.




The opening of the Suez Canal in 1869 brought the Red Sea, and to a lesser extent the Indo-Pacific region, into contact with the Mediterranean Sea. For decades we have recorded the introduction of Indo-Pacific molluscan species into the Mediterranean, called Lessepsian Migration. This atlas is a welcome record of mollusks that have entered our domain, since 1920 (with a few exceptions) for the Indo-Pacific region and of other exotic species from other regions that arrived after 1960.

Published by Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée, the book starts with general scientific remarks and a list of 137 exotic species. These are well illustrated and described, with mode of introduction and establishment recorded on a double page for each species, including a distribution map. Key references are also recorded for each species. There is an annotated list of excluded species, with the rationale for exclusion, and an extensive bibliography. In total, 85% of the introduced species are from the Red Sea or the broader Indo-Pacific domain. The layout of the book is exemplary, with good graphics and clear supporting text. This combination makes for a handy and easy-to-use reference.

There may be differences of opinion about certain data mentioned and whether additional species should have been added, but by the time any book is ready for print, new species have inevitably surfaced. We must give credit to the scientific team that spent six years accumulating the data recorded, combing the archives of reference collections of museums and institutes, and including information from a network of experts and collectors. Congratulations on a fine piece of work from which all people interested in the Mediterranean can benefit.

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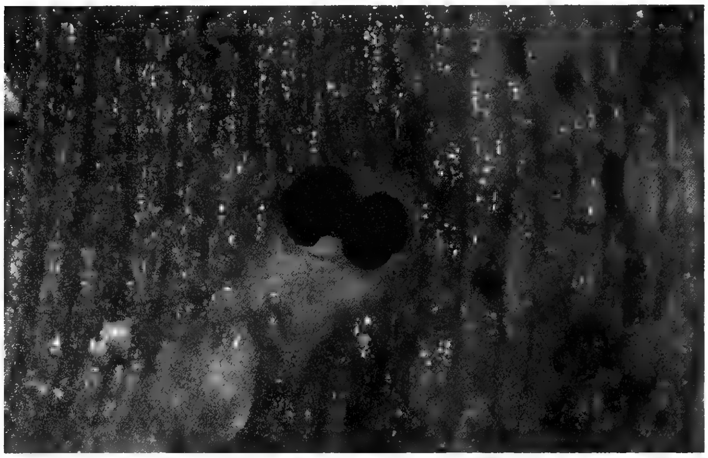
# Nesting Clam: A Field Observation

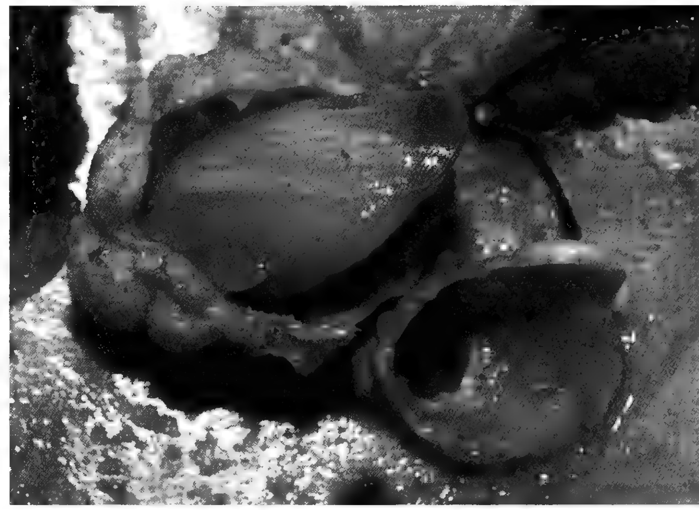
**by Peggy Williams**

On a field trip, someone picked up a *Mercenaria* clam and thought it was alive, but it had been drilled by another mollusk. The hole looked like this:



This is a double hole, however, whereas a drill hole is a single. So we checked to see if the clam was alive, and inside it was this structure, which is apparently calcareous (that is *Acanthochitona pygmaea* in the shell).

Breaking open the nest, I found a mollusk inside it:



This turned out to be *Gastrochaena hians* (Gmelin, 1791), a shell I have often found in coral rock but never out "in the open" like this. The shell is gaping, without protection for its foot, and in coral the animal excavates a nest to protect it, but I see that it is capable of creating a nest of its own. It drilled through the clamshell to extend its siphon. In this last image you can see the animal's foot, still firmly holding on to its hard nest.

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# Profile: Boston Malacological Club

**by**

**Warren Graff**

The Boston Malacological Club, or 'Mal' Club as it is more often called by its members, is the second oldest continuously active shell club in America, behind only California. It was begun in 1910 by Boston area aristocrats and was initially quite exclusive. Times changed, and scientists and true malacologists joined the ranks and fostered the club's direction for many years. Charles W. Johnson, who was curator of the Boston Society of Natural History, was one of the more prominent early members. William (Bill) Clench, a student at Harvard's Museum of Comparative Zoology, was also a member in those early days and later became curator of the Mollusk Department at the MCZ. This started what later became known as the Clench-Turner era of the Boston Mal Club, when Bill Clench and Ruth Turner were making names for themselves in the world of malacology. It was at this time that Dr. Clench published *Johnsonia*, a monograph of the marine mollusks of the western Atlantic, named after his mentor, Charles W. Johnson. Dr. Turner and other scientists in America and the Caribbean made significant contributions to this work.

Until around 1980, the Boston Mal Club's officers and members primarily consisted of members of the academic community. Some prominent members included: Henry Russell, Richard Foster, Ken Reid, Henry Cutler, and Morris (Karl) Jacobson. Dr. Russell served for over twenty years as Conchological Recorder and eloquently presented the latest in mollusk-related academic publications. Karl Jacobson served as the annual club auctioneer prior to George Buckley. In the 1950s the club began to meet in its current location, room 101 of the Harvard MCZ in Cambridge, Massachusetts. Members came from as far away as New Hampshire, Rhode Island, and Cape Cod.

During the 1960s and 1970s other prominent members who made their mark and served as officers of the Boston Mal Club included George Buckley, Dr. Patricia Morse, Walter Baranowski, Kay Peterson, Robert Bullock, A. Gordon Melvin, and our current president, Faith Rubin. BMC member Robert Bullock earned his doctorate at Harvard, writing his thesis on the systematics of Polyplacaphora (chitons). A. Gordon Melvin authored the well-known shell book *Seashells of the World with Values*. George Buckley, served twice as BMC president and currently is its auctioneer. George also serves as a board member of the New England Aquarium and the Boston Sea Rovers. Sea Rovers is a world-renowned organization dedicated to the exploration and preservation of the world's oceans.

The 1980s and beyond saw a change in the club's membership toward more amateur malacologists. The club also began attracting young shell enthusiasts. Members Charlotte and Elliott Michaelson, who owned a local shell store, sent many prospective new members to the Boston Mal Club. The club conducted its first and most memorable shell show at the New England Aquarium. During these years the BMC enjoyed visits by R. Tucker Abbott and S. Peter Dance. Soon the club's membership swelled to an all-time high. Members who joined or 'rejoined' during the '80s and '90s included Ed Nieburger, Warren Graff, Calvin Wright, and Zachary Zevitas. Some of our most artistic members, Richard Trefrey, Kristina Joyce, and Mathilde Duffy, also joined at this time. Michael LaFosse, a member since the early '70s, became known worldwide for his expertise in origami, the art of paper folding. The Boston Mal Club was fortunate to add fossil mollusk collector Don Robak and reef diver and collector extraordinaire Scott Robichaud to its ranks. Gary Rosenberg, now Associate Curator and Chair, Dept. of Mollusks at Philadelphia's Academy of Natural Sciences and a member of the Philadelphia Shell Club, earned his doctorate at Harvard while a member of the Boston Mal Club. Other active members include Owen Gingerich, Valerie Gould, Dan Teven, Leonor Desmarais, Jeanne Cavanaugh, Kevin Czaja, and David Gorman. Professor Gingerich has written widely on astrophysics and on the history of astronomy, and occasionally on shells. He and his wife Miriam are avid shell collectors and have built a major collection of *Fusinus*. Kevin Czaja and friend Brian Cassie plan to write a book on New England shells.

The Boston Malacological Club, still thriving and attracting new members, is looking forward to its 100$^{th}$ Anniversary in 2010. The club will continue to provide a malacological forum for professionals and non-professionals, as well as continue to foster its relationship with the Harvard MCZ's Mollusk Department, which has provided access though the years to its collections and information. The BMC Shell Club pin, honoring *Epitonium championi* (Clench & Turner, 1952), was originally drawn by club member and treasurer for many years, Barbara Crowley. For New Englanders, finding this uncommon shell is equivalent to finding a *Junonia* at Sanibel. [Ed. note: The BMC recently provided COA $10,000 to establish the Clench/Turner Grant.]

Front row (L to R): Warren Graff, Leonor Desmarais, Mathilde Duffy

Middle row: Donald Robak, Kelli-Ann Bliss, Valerie Gould, Kristina Joyce, Edward Nieburger

Back row: Christopher DiPerna, Dan Teven, Zachary Zevitas, Scott Robichaud, Marie Reid, George Buckley, Faith Rubin, Owen Gingerich, Carol Weston, John Galloway.

# SCUM IX: Southern California Unified Malacologists

by

**Lindsey T. Groves**
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SCUM IX participants, front to back: Row 1 (kneeling) L to R: George Davis, Wes Farmer, Kelvin Barwick. Row 2: Daniel Geiger, Phil Liff-Grieff, Terry Rutkas, LouElla Saul, Judith Garfield, Henry Ruhl, Ángel Valdés, Kent Trego, David Lawrence, John Ljubenkov, Larry Lovell. Row 3: Dan Ituarte, Scott Rugh, Mary Stecheson, Lindsey Groves. Row 4: Don Cadien, Tony Phillips, Seth Jones, Chuck Powell. Row 5: George Kennedy, Jim McLean, Carole Hertz. Top row: Bill Schneider, Nancy Schneider, Hans Bertsch, Jules Hertz. Image courtesy of Kelvin Barwick.

Twenty-nine professional, amateur, and student malacologists and paleontologists attended the 9th annual gathering of Southern California Unified Malacologists (SCUM) at the city of San Diego's new Environmental Monitoring and Technical Services Laboratory (EMTSL), San Diego, California. This informal group continues to meet on an annual basis to facilitate contact and keep members informed of research activities and opportunities. In keeping these gatherings informal, there are no dues, officers, or publications. It is hoped the continuing success of informal groups such as SCUM, Bay Area Malacologists (BAM), and Mid-Atlantic Malacologists (MAM) will encourage other regional groups of malacologists and paleontologists to meet in a similar manner.

SCUM IX was co-hosted by Kelvin Barwick of the EMTSL and members of the Southern California Association of Marine Invertebrate Taxonomists (SCAMIT), who provided the morning snacks, coffee, and collectible SCAMIT mugs as door prizes. Many attendees presented current mollusk-related research and activities. Following lunch, Kelvin led a tour through the preparation areas, labs, and research facilities of the EMSTL. On exhibit at the meeting were several examples of deep-water mollusks and echinoderms collected off Santa Barbara Co., California, and a large (seven foot) black coral specimen. On a sad note there was an announcement that SCUM members Kristina Louie and Yvonne Albi had passed away in 2004. SCUM X will be hosted by Daniel Geiger of the Santa Barbara Museum of Natural History in January of 2006.

SCUM IX participants and their activities:

**Kelvin Barwick** (San Diego, EMTSL): with San Diego's ocean monitoring program collecting information on water quality, sediment sampling, and data anaylsis. Kelvin also studies benthic and epibenthic invertebrates from southern California, including a description of a new species of *Okenia* with Ángel Valdés.

**Hans Bertsch** (San Diego, CA): studies nudibranch fauna of Bahia de los Angeles, Golfo de California, Baja California, Mexico; including three new species of *Okenia* (with Terry Gosliner) and a new species of *Tritonia* (with Ángel Valdés and Alicia Hermosillo).

**Don Cadien** (L.A. Co. Sanitation District): with Los Angeles County oceanic monitoring program that includes collecting and identification of benthic marine invertebrates. A new project with Kelvin Barwick (EMTSL) involves the comparison of recently collected aplacophorans with those identified by Amilee Scheltema in 1994.

**George Davis** (Nat. Hist. Mus. L.A. Co.): is collection manager of Crustacea at LACM and is currently computer cataloging the extensive type collection.

**Wes Farmer** (San Diego, CA): Continues faunal and stratigraphic observations of outcrops at Torrey Pines State Beach, La Jolla, California.

**Judith Garfield** (La Jolla, CA): Science writer/illustrator and diver. Interested in coastal issues and mollusks.

**Daniel Geiger** (Santa Barbara Mus. Nat. Hist.): with the SBMNH as scanning electron microscope (SEM) technician. Continues revision of the family Scissurellidae and desperately needs additional material for his research.

**Lindsey Groves** (Nat. Hist. Mus. LA Co.): published four new Cretaceous cypraeid species from California and British Columbia and continues work on a companion volume to Keen & Bentson's (1944) *Check list of California Tertiary marine Mollusca*, a revision of the cypraeid genus *Muracypraea*, new species of *Eocypraea* from California, Washington, and Baja California, Mexico, and an annotated list of W.M. Gabb's fossil invertebrates.

**Carole Hertz** (San Diego Shell Club): editor of SDSC publication *The Festivus*. Continues to volunteer at the SD Natural History Museum with Barbara Myers on the superfamily Muricoidea.

**Jules Hertz** (San Diego Shell Club): current SDSC president (for the 7th time!), and continues as business manager for club publication *The Festivus*.

**Dan Ituarte** (City of San Diego, EMTSL): no report.

**Seth Jones** (Merkel Labs, San Diego, CA): continues interest in all marine invertebrates.

**George Kennedy** (Brian F. Smith & Assoc., Poway, CA): research on Pleistocene molluscan paleontology and biostratigraphy of San Diego Co., CA, especially a 300,000 year old interval between the Pliocene San Diego Fm. and the 120,000 year old Bay Point Fm.

**David Lawrence** (San Diego, CA): no report.

**Phil Liff-Grieff** (Pacific Conchological Club): collects terrestrial mollusks and has a recent interest in micro-mollusks and chitons. Currently an active member of the PCC and editor of its newsletter, *Las Conchas.*

**John Ljubenkov** (Pauma, CA): biological consultant with expertise in mollusks and cnidarians.

**Larry Lovell** (Scripps Inst. Oceanog.): polychaete taxonomist and consultant, collection manager of benthic invertebrate collection at SIO. Recent interest in vesicomyid bivalves and new geographic and depth extensions.

**Jim McLean** (Nat. Hist. Mus. L.A. Co.): continues with identification manuals of North Pacific shelled gastropods from central Baja California, Mexico to the Sea of Japan, a worldwide revision of the gastropod family Liotiidae, and the gastropod section of the revision of Light's Manual.

**Tony Phillips** (L.A. Co. Sanitation District): active SCAMIT member and interested in the taxonomy of mollusks and polychaetes.

**Chuck Powell** (U.S. Geol. Surv.): current projects include Miocene/Pliocene invertebrates of the Wilson Grove Fm., Sonoma Co., CA, mollusks of the "Margaritan Stage" (middle to late Miocene) of the San Joaquin Valley, CA, and using paleontology to define the Pleistocene stratigraphy of the Los Angeles Basin, CA.

**Scott Rugh** (San Diego Mus. Nat. Hist.): Invertebrate Paleontology collection manager at SDNHM. Recently observed mollusk fossils and stratigraphy on the Kettleman Hills anticline, Kings Co., CA.

**Henry Ruhl** (Scripps Inst. Oceanog.): participated in the continuing SIO *PULSE* project off Pt. Arguello, Santa Barbara Co., CA, a study of deep water invertebrates, especially mollusks and echinoderms. A particularly rich site has yielded important information/data pertaining to climate changes.

**Terry Rutkas** (Pacific Conchological Club): president of the PCC and interested in Pacific island cultures, a factor in his initial interest in shell collecting.

**LouElla Saul** (Nat. Hist. Mus. L.A. Co.): research on Cretaceous mollusks and Miocene argonauts. She was recently awarded the prestigious Gilbert D. Harris award from the Paleontological Research Institution for excellence in systematic research.

**Bill Schneider** (San Diego Shell Club): reported on and exhibited a 7 ft. tall black coral specimen snagged on a rod-and-reel from 400 ft. depth near Hurricane Bank, Baja California, Mexico. The spectacular specimen included numerous attached mollusks and bryozoans.

**Nancy Schneider** (San Diego Shell Club): collects Pliocene and Pleistocene molluscan fossils (especially pectinids) from Baja California, Mexico.

**Mary Stecheson** (Nat. Hist. Mus. L.A. Co.): computer databasing of Pleistocene invertebrate paleontology collection at LACM. Recently completed her master's degree at California State University, Northridge, on Cretaceous mollusks of the Chatsworth Fm., Simi Hills, under Richard Squires.

**Kent Trego** (San Diego, CA): studies the benthic mollusk and echinoderm collections at Scripps Institute of Oceanography.

**Ángel Valdés** (Nat. Hist. Mus. L.A. Co.): phylogenetic research on nudibranch and opisthobranch mollusks. Recently completed a paper with Kelvin Barwick on a new species of *Okenia* from southern California.

# Some Notes on the Evolution of Mollusks

**Zvi Orlin**

As I have been studying evolution, I decided to summarize the facts about molluscan evolution. This was no easy task, and I decided to concentrate on the more important mass extinctions and their effects on the taxa of mollusks, but mainly at the level of classes and orders. I will not recount all the minor extinctions, although they took their toll of many species. I consider this a short résumé of the exciting tale of evolution, with mention of only selected major events. We are obliged to refer to the geological eras, and I present herewith a copy of a chart with their designations, necessary to understand the time series of events described. We must remember that the Mollusca had a decided advantage, with their hard calcium carbonate shells that enabled them to be well preserved in the fossil record. The use of mollusks has played a central role in biostratigraphy, and was, in fact, key to the development of the discipline itself. With the help of fossils we can identify approximate time sequences in the geological layers, and they are of great assistance in determining the record of evolution in the different strata.

**The Paleozoic Era** was the longest of the eras, lasting from 550-251 million years ago (mya), and includes the Cambrian and Ordovician Periods in the early part of the era, the Silurian and Devonian Periods in the middle of the era, and the Carboniferous and Permian in the late Paleozoic. During this era, 3 of the 5 known massive extinctions took place, including the major one at the end of the Permian.

The first mollusks are found in the Paleozoic. In the Early Cambrian, gastropods and bivalves, and later nautiloids are found, but they were very small, measured in millimeters. They were all found alongside brachiopods (similar in appearance but very different from mollusks), suspension feeders housed in bivalve shells that were to become very important in later times. In the Cambrian most of the eight classes of mollusks evolved. The phylum may have a Precambrian history, as yet not found.

In the next Period, the Ordivician (505-438mya), the gastropods and bivalves radiated to many forms and enlarged in size. They were found on or within the substratum and many were coiled. They were largely stationary on the sea floor, although there were some that crawled and resembled modern species. The Early Paleozoic gastropods were mainly of the order Archaeogastropoda, encompassing 34 families but declining to fewer than 22 families in the present. Other prosobranch orders were of lesser importance. In the Middle Paleozoic, the Mesogastropoda appeared with 27 families of which there are only 22 families still extant. Opisthobranchia also appeared at this time but to date have played a minor role in the fossil record. Large nautiloids were among the largest animals living during this period. Of the cephalops in the Middle Ordovician, there were 30 diversified families. By the Late Ordovician this had expanded to 50 families (mostly Nautiloidea). More than a third of all known Cephalopoda genera existed during this period, although now only a single genus, *Nautilus*, remains.

At the end of the Ordovician there was a mass extinction (the first of the Big Five), which even though regarded as intermediate in strength, caused the extinction of 40-50 % of the known species worldwide. The nautiloids were the most affected of the mollusks and persisted in low diversity, but the new class of ammonoids rapidly diversified. Because they were distinctive and relatively short-lived, they serve as important index fossils and can be used to identify geological layers in the relevant time sequence, a great help to paleontologists. The gastropods and bivalves recovered from the mass extinction and the latter even expanded their ecological niche by invading non-marine habitats (as in the Upper Devonian strata in New York State).

A second intermediate mass extinction of marine life took place at the end of the Devonian Period (360mya), the second of the Big Five. Brachiopods, which had existed in large numbers, were hard hit and only 15% of genera are found in later strata. Ammonoids were also on the decline and many types of gastropods and rugose corals suffered catastrophic extinctions. Species of the cold regions of the world seemed to have survived better than those of the tropics, suggesting that changing climate may have triggered the extinction.

The Late Paleozoic Era ended at 251mya. This was the period when the supercontinent of Pangaea was formed, joining all other continents to Gondwanaland. The ammonoids rediversified quickly, although only two genera were thought to have survived the Devonian extinction, and once more assumed an important ecological position. This was a period of mobile predators, in which sharks and bony fishes proliferated. Burrowing and surface dwelling bivalves continued to thrive, and gastropod faunas were rich and diverse. At the end of the Permian there was a major mass extinction, the third of the Big Five, in which about 90-95% of the known species of the world became extinct.

**The Mesozoic Era** follows the Permian mass extinction, from 251-65mya. It is often called the Age of Dinosaurs and includes the Triassic, Jurassic, and Cretaceous Periods. Marine biota were impoverished at the start of the era, but the ascendancy of the mollusks is noteworthy. The ammonoids made a dramatic recovery (after almost total extinction where only two genera were thought to have survived) and Lower Triassic rocks have yielded more than a hundred genera that diversified to exceed their pre-extinction level. The adaptive radiation that produced these genera seems to have issued from a single genus, *Ophiceras*. Species in this genus show great diversity in size and shape, with specimens from a few mm in size to over 2.5 meters in diameter and ornamentation of ribs, nodes, spines and other growths. The other important cephalopods were belemnoids, relatives of the ammonoids and squid-like in appearance. They pursued prey by jet propulsion and were gregarious and traveled in large groups. In the Mesozoic many types evolved. The gastropods and bivalves were less severely affected by the Permian extinction than the other groups and expanded in number and variety to become amongst

the most important groups of Early Mesozoic marine life. As in the Paleozoic some bivalves burrowed in the sea floor while others rested on the sediment. The Mesozoic representatives of both groups closely resemble those living today. During the Cretaceous (Late Mesozoic) the neogastropods appeared, most aptly named and progenitors of many modern families and genera. Unlike earlier gastropods, these mollusks were generally carnivorous and fed on such prey as worms, bivalves, and other snails. Also appearing during this era were the Mesogastropods, like the modern Strombidae and Cypraeidae. Of the bivalves, particularly interesting were the rudists, as they lived like corals, forming large tropical reefs using the niche vacated by former rugose corals. They assumed the prominent role in tropical reef growth in the Middle and Late Cretaceous and seem to have overcome the corals temporarily for dominance. There were also coiled oysters of enormous size, such as *Inoceramus*, at almost 1 meter in diameter. Also of interest among the bivalves were the three taxa: *Claraia*, *Eumorphotis*, and *Unionites*. These radiated during the Early Triassic into numerous new species. The other bivalves continued their slow evolution and only recovered their pre-extinction diversity in the Mid Triassic.

There were two more intermediate extinctions (the last of the Big Five) in the Mesozoic. The first of these extinctions was at the end of the Triassic and the second at the end of the Cretaceous. Rudists and other large surface-dwelling groups, including the ammonites and belemnites, did not survive this last mass extinction. Corals and coralline algae prevailed on the reefs once more.

**The Cenozoic Era** (65-1.8mya), or the Tertiary Period as it is also known, includes the Paleogene and Neogene. This era is sometimes called the Age of Mammals as these diversified after the dinosaur extinction. In the Early Tertiary, pteropods appeared. They are small pelagic gastropods with fleshy wings for swimming and are commonly called sea butterflies. There are 15 extant genera with about 100 known species. They spend their life afloat and are one of the important components of the plankton and a major source of food for whales. They are the main component of planktonic ooze in the oceans and are important in microevolutionary studies. In this period marine life underwent only modest changes and marine life largely resembles that of the modern world. The real acme of gastropod evolution was reached in the Cenozoic. The neogastropods, which dominate today's gastropod fauna, were a great success with their long siphons, but they evolved slowly.

This ends my short résumé on the evolution of Mollusca and I hope I will be excused if I have omitted many exciting chapters in this fascinating story.

References:

**Stanley, Steven M.** 1985. Earth and Life Through Time. W.H. Freeman and Company, New York, pp.690.

**Benton, Michael J.** 2003. When Life Nearly Died. Thames and Hudson Ltd. London, pp.336.

**Clarkson, E.N.K.** 1987. Invertebrate Paleontology and Evolution. Allen and Unwin, London, pp. 382

**Kummel, Bernhard.** 1970. History of the Earth, Second Edition. W.H. Freeman and Company, San Francisco, pp. 707.

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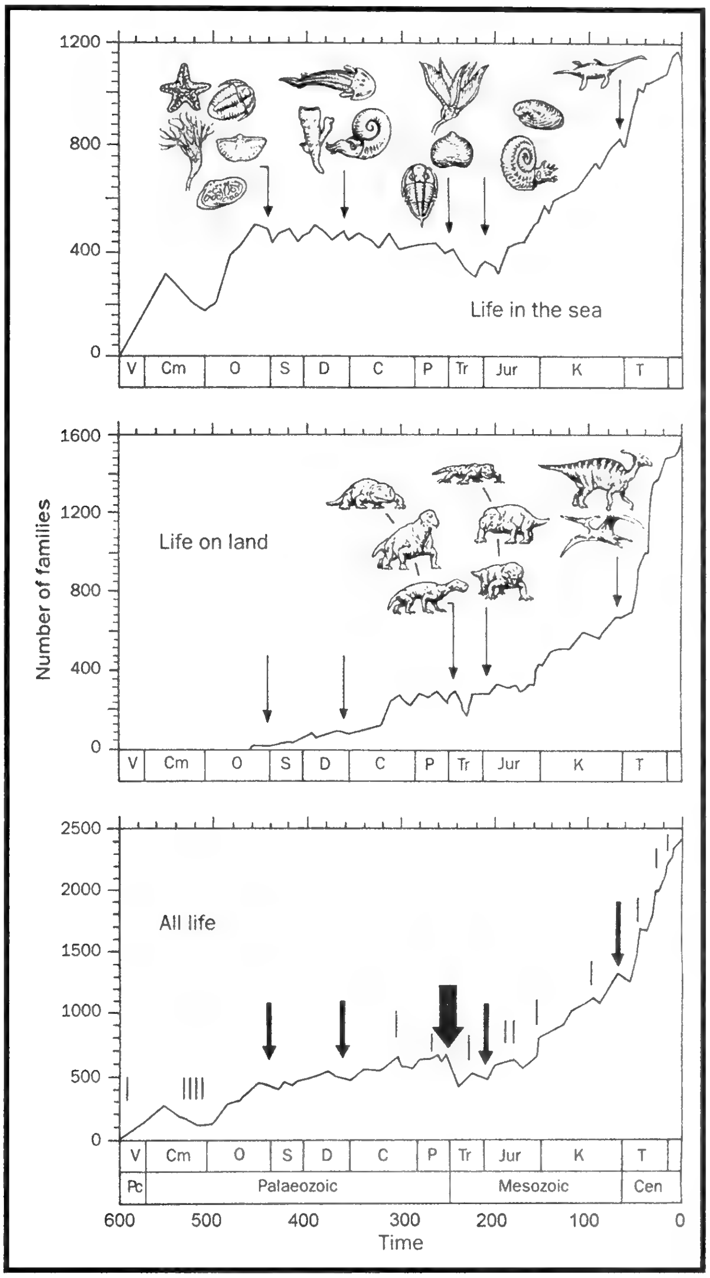
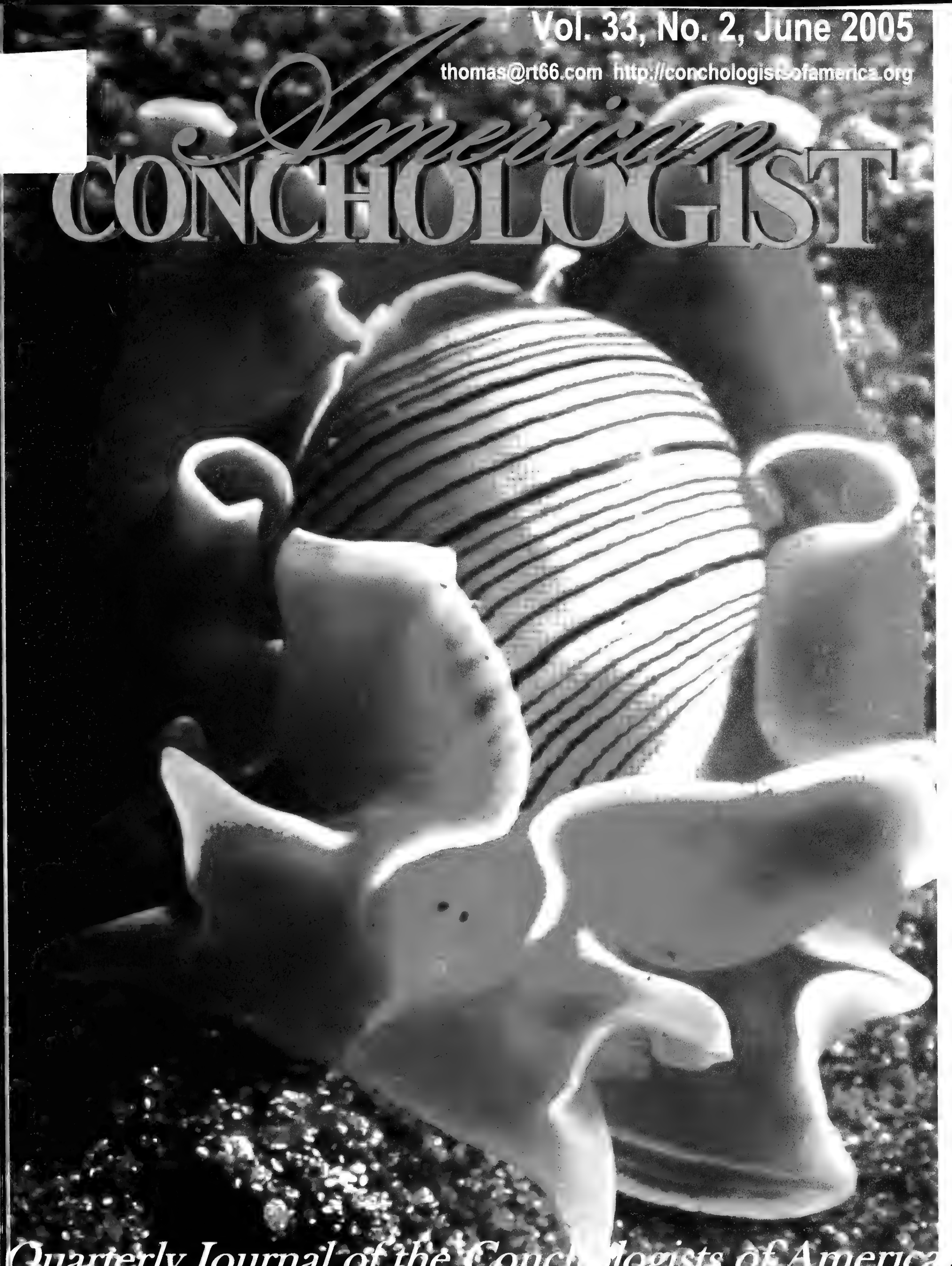



Diversification of life in the sea, on land, and total, from 600mya to the present. Extinction events are indicated by vertical lines and arrows on the bottom chart, with the strength of the event indicated by the width of the line. Abbreviations: C Carboniferous, Cen Cenozoic, Cm Cambrian, D Devonian, J Jurassic, K Cretaceous, O Ordovician, P Permian, Pc Precambrian, S Silurian, T Tertiary, Tr Triassic, V Vendian. Charts are reprinted (with the addition of mya figures) from Benton (2003, ill. 17, p. 131). Original charts are based on data in Benton, *Diversification and extinction in the history of life*, Science, 268, pp. 52-58. Redrawn and embellished by John Sibbick and published in *When Life Nearly Died* by Michael J. Benton, Thames & Hudson Ltd, London. Used by permission.

Vol. 33, No. 2, June 2005
thomas@rt66.com http://conchologistsofamerica.org

# American CONCHOLOGIST



Quarterly Journal of the Conchologists of America

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 33, No. 2 June 2005**

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***



**Visit the COA website: http://conchologistsofamerica.org. Subscribe to Conch-L, the COA listserver at: listserv@listserv.uga.edu instructions on the COA web site.**

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**Correction:** Vol. 32, no. 4, Florida Fossils, p. 18, *Hystrivasum horridum* Heilprin, 1866 should be ***Hystrivasum horridum* (Heilprin, 1886).** Correction by Phyllis Diegel.

**Front cover:** *Hydatina physis* (Linnaeus, 1758), approximately 35mm (shell length), from 30ft deep, at night on a coral sand slope, off Lembeh Island, Indonesia. Photograph courtesy of Charles E. Rawlings, 1819 Buena Vista Road, Winston-Salem, NC 27104 [rawlings@mackenzielawfirm.com]

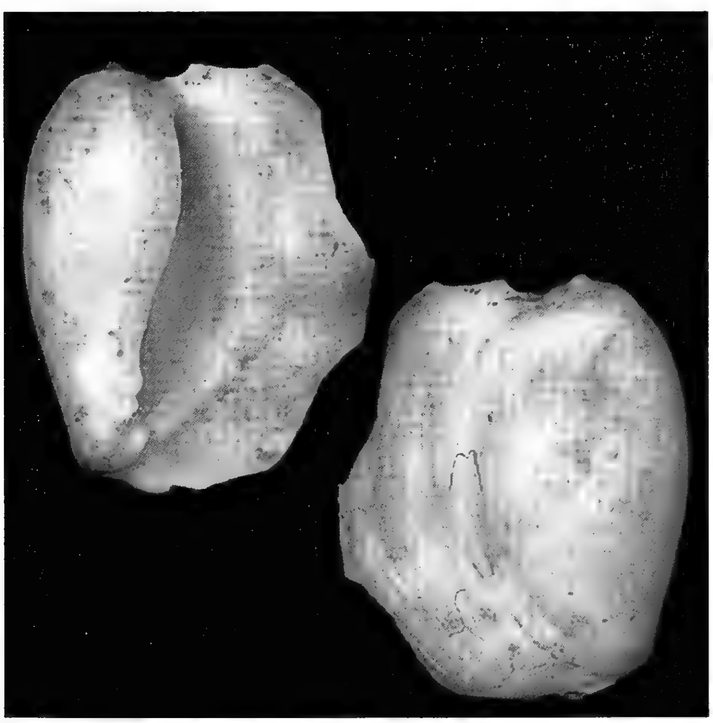
**Back cover:** *Tonicella lineata* (Wood, 1815), 35mm, from 10m deep, off Eider Point, Unalaska Bay, Aleutians. Photograph courtesy of Roger Clark, 1839 Arthur Street, Klamath Falls, OR 97603 [insignis@charter.net]

# CLOSE AND CLOSER LOOKS AT A *PEDICULARIA* (COWRIE-RELATIVE) LARVAL SHELL

By

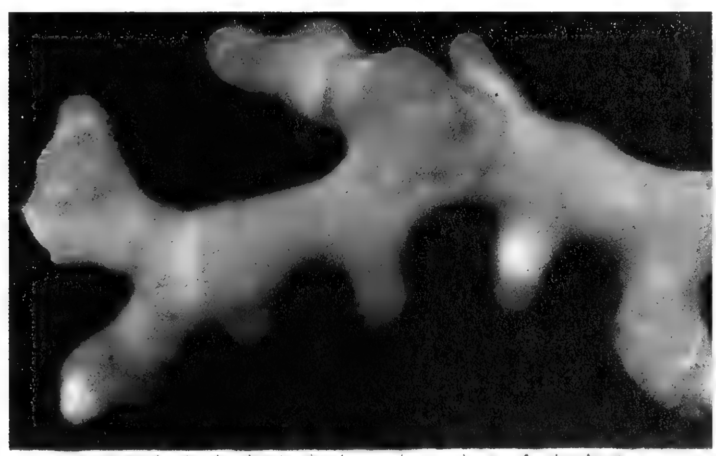
Robert Robertson

In April 1970 I was twice on the Bermuda Biological Station Research Vessel PANULIRUS II, about 43km southeast of Castle Roads, Bermuda. Both times, two plankton tows were made from the surface down to between 80 and 130m, where they were towed semi-horizontally for 10 to 20 minutes at a speed of 4km/hr (2 knots). Each time, many cubic meters of Atlantic seawater were filtered. The tows were made during midday and mid-afternoon, important information because plankton migrates vertically in a day-night cycle. The plankton net used was 1m wide, 3.5m long, and had a mesh aperture of 0.37mm towards the opening and 0.20mm at the "cod" (rear) end. The net used could not exclude the inadvertent catches made between the surface and 80m, when the net was going down or back up. Some special plankton nets can do this. Plankton habitat data often have to be vague! Plankton is mainly a profusion of tiny organisms, notably crustaceans, but also heteropods and pteropods, two snail groups pelagic in both larval and adult stages, as well as snails with pelagic larvae and bottom-dwelling later stages. Concentrated mushes of pure initially living plankton were collected in containers in each cod end. Even if this mush is cooled, it quickly becomes putrid. Anything wanted while still alive has to be separated out promptly. The larval shells illustrated here were found after their bodies had died and disappeared. The specimens were at the bottom of the container.



**An adult specimen of *Pedicularia decussata* (Gould, 1855), 16mm, from Panama. The larval shell like that found in the plankton tow can just be seen at the apex of this specimen. Photo courtesy of Femorale (www.femorale.com).**

Included in one tow were three brown larval shells of *Pedicularia decussata* Gould, 1855, in the family Ovulidae (ANSP 320984), which is allied to the true cowries (Cypraeidae). *P. decussata* is possibly a subspecies (geographical race) of *P. sicula* Swainson, 1840 - of the Mediterranean (Richter & Thorson, 1975: 142, 143, pl. 9, fig. 58a, b). These larvae can be "common," floating in tropical or warm-temperature plankton around the world, but the post-larvae and adults, rare in collections, are strict symbionts with stylasterine hydrozoans, or rarely, with non-reef-building true stony corals and gorgonians, all bottom-dwellers. Larvae that were probably those of a *Pedicularia* were already known from near Bermuda (Scheltema, 1971: 298) and Scheltema (1971: 307, fig. 12) found *Pedicularia* larvae in tropical and warm-temperature shallow waters across much of the whole North Atlantic Ocean, yet the genus seems to be not yet known there as adult bottom-dwellers with their hosts from Bermuda.

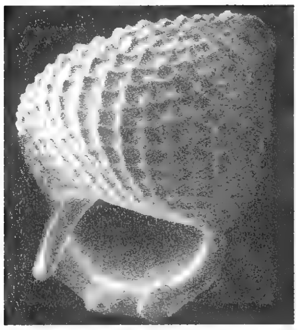


**Adult *Pedicularia californica* Pease, 1865, on its symbiont stylasterine hydrozoan host. The adult shell not only matches the pink color of its host, but is contoured to fit the shape of its home on the "coral" substrate. Pedicularia feed on the polyps and other soft tissues of their coelenterate (cnidarian) hosts. Tahaa, Society Islands, French Polynesia (ANSP 309467). Scale in mm. Photo by the author.**

The adult shell is irregularly shaped and conforms to the shape of its "coral" substrate, as well as matching it in color. This is illustrated here in the color photo of *Pedicularia pacifica* (Pease, 1865), shown in dorsal view on its stylasterine host (probably *Allopora*). Readily accessible illustrations of adult *Pedicularia* shells are shown in apertural and apical views by Abbott (1974: 151, 2 figs. 1653).

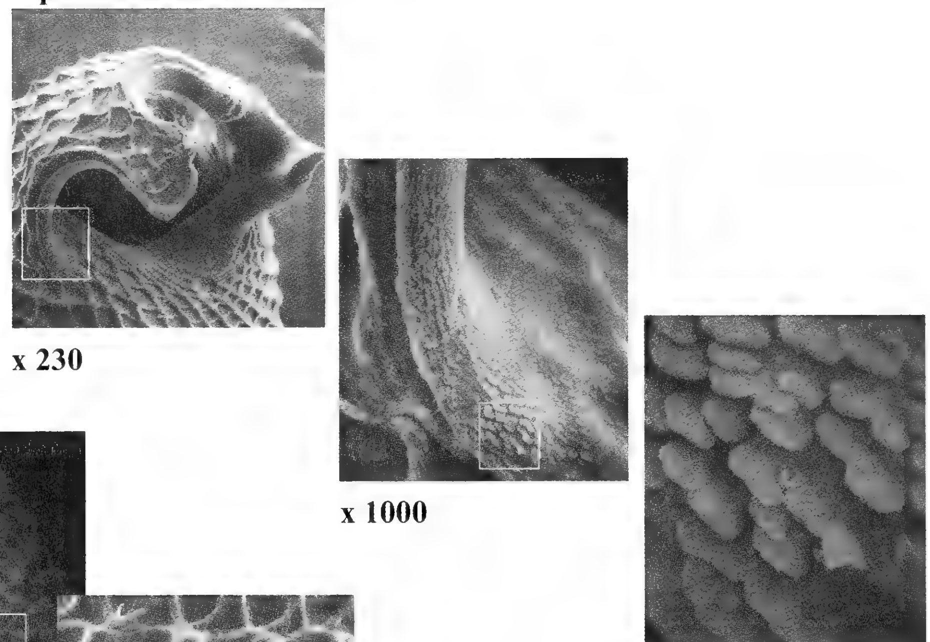
The empty larval shells of *P. decussata* were studied with the aid of a scanning electron microscope (SEM) back on land. Images ranging in magnification from X100 to X5000 were

**Larval shell**



x 100

**Apertural view**

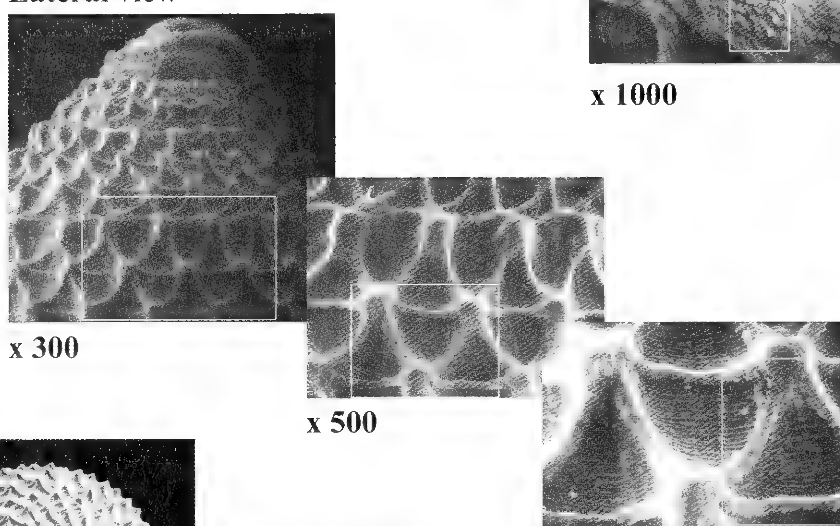


x 230

x 1000

x 5000

**Lateral view**



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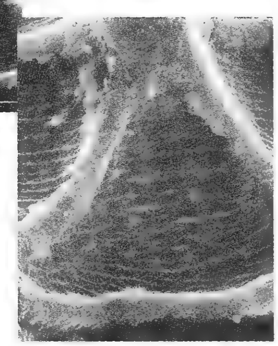

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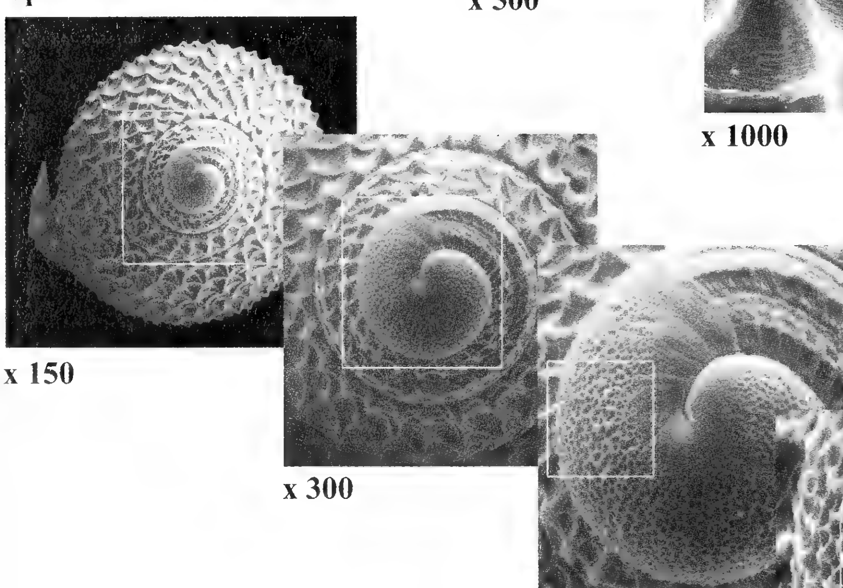
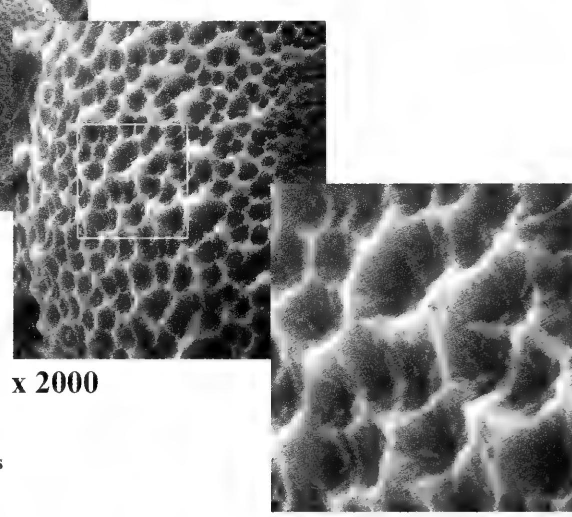
**Spire view**



x 150

x 300

x 600



x 2000

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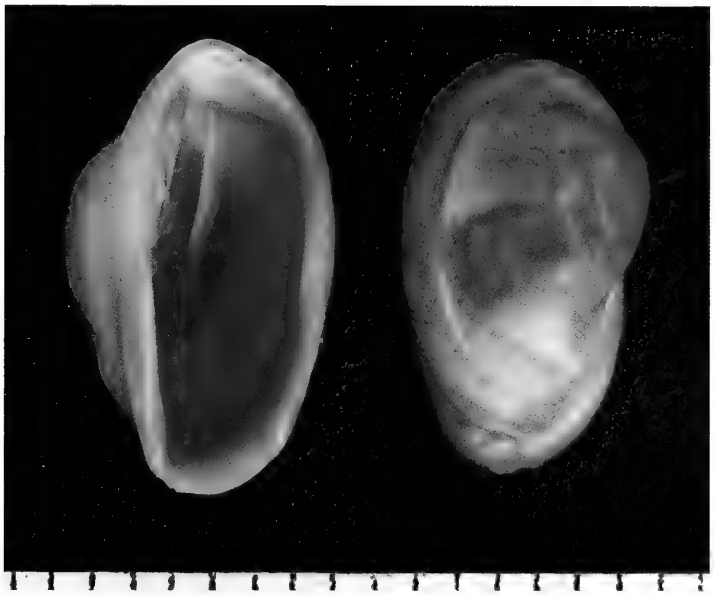
***Pedicularia decussata*** **(Gould, 1855), larval shell, approximately 0.5mm. These photos show some of the capabilities of a scanning electron microscope (SEM) to study hard and even soft tissues at high magnifications, if these tissues are hardened and covered with a thin layer of an appropriate metal (e.g. gold). The photos also show the possible external sculpture intricacies of even a larval shell. Here we can see sculptural intricacies that may record stages or changes in the life history of the shell and the living animal it contained. The magnification is indicated under each image, photos by the author.**



*Pedicularia pacifica*, **adult sexual pair of shells. Left: adult female (larger shell), apertural view. Right: adult male, dorsal view. Scale in mm. Photo by the author.**

obtained. What appears to be a "protoconch" at the tip is actually the embryonic shell grown when the larva was still developing inside the mother, before it hatched as a free-swimming planktonic larva. If a larval shell is attached to a post-larval or adult bottom-dwelling shell, the whole larval shell is called a protoconch. All the SEM photos show only larval shells or parts thereof, and excepting the embryonic apical shell, these are all grown when the larva (veliger) is still planktonic.

**References:**

**Abbott, R.T.** 1974. American Seashells, ed. 2. Van Nostrand Reinhold, New York.
**Arnaud, P.M. & Zibrowius, H.** 1979. L'association *Pedicularia sicula – Errina aspera* en Méditerranée (Gastropoda Prosobranchia et Hydrocorallia Stylasterina), *Rapp. Réun. Comm. Inter. Explor. Scient. Mer Méditerran.*, 25/26: 123-124.
**MacDonald, J.D.** 1858. On the probable metamorphosis of *Pedicularia* and other forms; affording presumptive evidence that the pelagic Gasteropoda, so called, are not adult forms, but, as it were, the larvae of well-known genera, and perhaps confined to species living in deep water, Trans. Linn. Soc. London, 22:241-243, pl. 42.
**Richter, G. & Thorson, G.** 1975. Pelagische Prosobranchier-Larven des Golfes von Neapel, *Ophelia*, 13: 109-185.
**Robertson, R.** 1970. Review of the predators and parasites of stony corals, with special reference to symbiotic prosobranch gastropods, *Pacific Sci.*, 24: 43-54.
**Robertson, R.** 1971. Scanning electron microscopy of planktonic larval marine gastropod shells, *The Veliger*, 14: 1-12, 9 pls. (plates 7-9 republished here).
**Scheltema, R. S.** 1971. Larval dispersal as a means of genetic exchange between geographically separated populations of shallow-water benthic marine gastropods, *Biol Bull.*, 140: 284-322.
**Schmieder, R.W.** 1982. Shape irregularity in *Pedicularia californica*, *The Veliger*, 24: 272, 1 fig.

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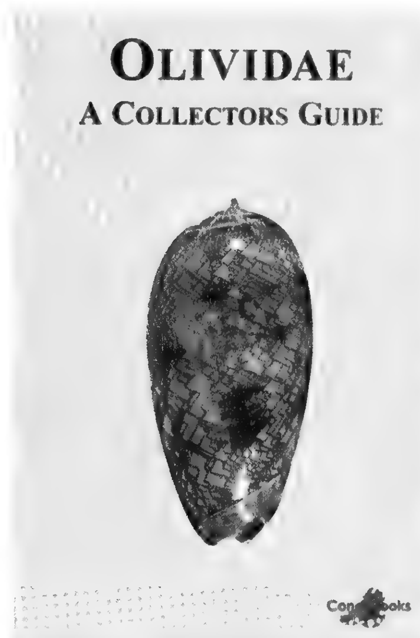
# Book Review: OLIVIDAE A Collector's Guide

**By Gunther H.W. Sterba, 2004, 172p. 62 colored plates, 37 figures.**

Olividae is a family in which I have always had great difficulty determining species identification. This is perhaps understandable as there are almost innumerable forms, some of which vary to a large degree and make correct identification difficult, especially with the limited means available to most collectors. I was therefore very happy to learn of this new updated publication that could assist me in my classification efforts. This book is an enlarged and revised English translation from the German edition published last year.




First a detailed description is given of the shell, followed by the systematics of the family, and then the colored plates, with pictures of 237 of the 317 valid species. The species not figured are named in the supplement, with brief information about each, many of which are deep-water species, of which only a few specimens are known.

The color photographs are excellent and usually depict both the dorsal and ventral side of the shell. Small species are shown natural size, with enlarged pictures alongside to show details. Perhaps most important is that many of the various forms are also shown, often with a wide range of differences in color and pattern depicted, of great importance to the collector for proper identification. The text opposite the plates gives a detailed description of each species and their known distribution, especially where they have localized forms. Valid species are listed in bold type in the index. Many of the illustrations are from different locations, showing differences that are most important for correct classification.

After using this up-to-date book to check my collection, I can highly recommend it to all collectors who are interested in the classification of Olividae. We must thank Professor Sterba for his lifetime study of this interesting family and placing his expertise at our disposal in this excellent guidebook.

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# How to Collect and Successfully Preserve Chitons

By
G.B. Jeffrey

This article is my attempt to help those shell collectors out there who have an interest in chitons, but have never actually (or successfully) collected and preserved this interesting mollusk. Many collectors have told me that they have tried everything, but continually fail when it comes to collecting, and more importantly, preserving chitons. I usually chalk this up to a lack of patience, perhaps the main reason chitons are not more popular among shell collectors.

Chitons can have brilliant colors, interesting plate sculpture, and spectacular girdle hair displays, but if improperly collected or prepared, this is all lost and the end result is a curled-up dry brown specimen of little interest to anyone. On the other hand, my wife and I have been successfully collecting and preserving chitons for 24 years and visitors who see our collection are amazed at the colors, structure, and overall beauty of our chitons. We share a passion for chitons and are blessed to live in British Columbia, Canada, where we have collected 27 different intertidal species. More are available from deeper waters, but we concentrate on the more readily available species. So let's get started. You will need:

**A group of intrepid chiton hunters on Tsulquate Beach, Port Hardy, British Columbia. Left to right: Tom Rice, Graham Jeffrey, Susanne Jeffrey, Drew Skinner, and George Holm.**

### COLLECTING TOOLS AND EQUIPMENT

- Assorted Plexiglas slides from 30mm to 90mm
- Thin-edged paring knife
- Toothbrushes, one soft, one stiff
- Cloth ties from old bed sheets, 1 inch wide by 24 inches long
- Packsack with flat bottom to fit medium sized bucket and all tools
- Small hand rake (for looking under kelp)

**KILLING SOLUTION**
- 2 parts alcohol (70% or higher)
- 1 part salt or fresh water

**PRESERVING SOLUTION** (discarded after each use)
- 2 parts alcohol (70% or higher)
- 2 parts glycerin
- 1 part salt or fresh water

Unfortunately, many collectors take chitons from the beach only to discover later that their specimens are broken, scarred, or otherwise not really suitable for display. Chitons found in the intertidal zone are often covered with algae, nature's perfect mask for hiding scars, breaks, and other imperfections. This is why the toothbrush is a necessary collecting tool. It allows you not only to clean a potential specimen in the field enough to avoid later disappointment, but also helps conserve this interesting mollusk by allowing you to leave specimens of non-interest to continue their life on the rocks.

### COLLECTING

Assuming you have chosen a good (and legal) collecting spot, with a low tide, plenty of kelp and rocks, and you have your collecting tools and bucket, you are ready to collect chitons. You may find some specimens exposed on the sides of larger rocks and boulders, but most will demand a bit more work and require turning over rocks. Remember, each rock or boulder you turn should be gently returned to its original position.

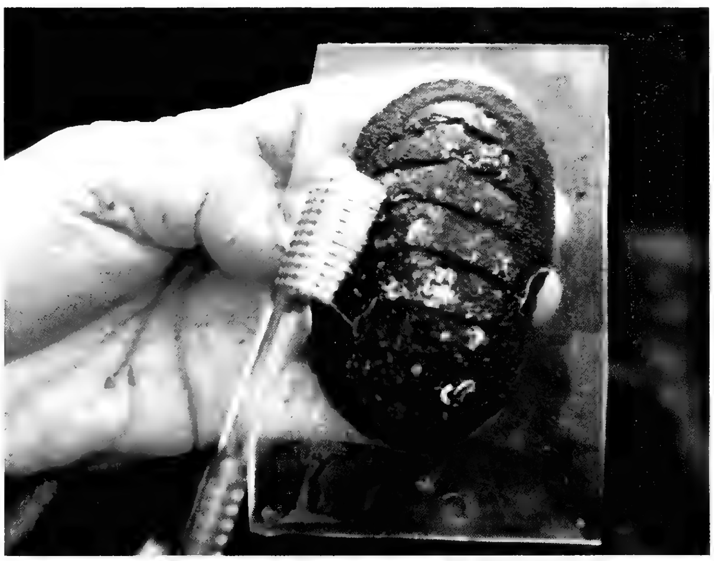
When you find a chiton you wish to collect, gently insert your knife under the rear part of the girdle and slowly draw the chiton onto a size-matching Plexiglas slide. With your thumb holding the chiton flat on the slide, wrap a tie around both chiton and slide, making sure it is tight enough to keep the chiton in place. Each slide can take two properly sized chitons. If you end up with a couple of slides with only a single specimen on each, they can be transferred and combined later. Remember to brush each chiton with a toothbrush before wrapping it on the slide so you can return an unwanted specimen to its original spot.

Dip your wrapped chitons in salt water before putting them in the bucket and take home a small container of seawater. This will enable you to keep them alive so that when you return home or

to the motel and find an uncooperative specimen you can coax it to lie flat and retie it.

**KILLING PROCEDURE**

Once home or back to your motel room you will need to kill the specimens to be preserved. Mix enough killing solution (2 parts 70% or better alcohol and 1 part salt water) to completely cover your wrapped specimens as they sit in a wide-mouthed jar. This is usually about three inches of solution. The jar should have a tight fitting lid and the solution will last you for quite some time. Remember to ensure each specimen is flat when it goes into this solution. This position will be permanent and cannot be adjusted after the specimens are removed from the solution. The chitons must be left in the alcohol solution for at least 24 hours. No cheating, although they can be left in for as long as one month without damage. The recommended time, however, is 24 hours.



**Above: cleaning a freshly collected specimen with a stiff-bristled toothbrush. Below: tying down this same specimen. This is probably not a specimen to keep, as it shows several breaks on plate edges and is severly encrusted. After posing for these photographs it was returned to its spot under a rock.**

**PRESERVATION**

After 24 hours your chitons are ready for preservation. Mix the preservation solution (2 parts alcohol (70% or higher), 2 parts glycerin, & 1 part salt or fresh water) in a clean jar. Put the glycerin in first, then the alcohol, and then the water. I measure each ingredient with a plastic ruler rather than worrying over exact quantities. Cap the jar and shake it to thoroughly mix the solution. This is an expensive solution, so only mix enough to cover the specimens by 5mm or so.

Unwrap your chitons from the Plexiglas slides and rinse all of the wraps and slides in fresh water. Do not use soap or cleaning fluids as these may stain or otherwise damage the next set of specimens. Put the chitons in the preserving jar and make sure all are covered with the solution. And now we come to the patience part of this drill. The larger the chiton, the longer it must remain in the preserving solution. **Be patient and do not rush this part of the process.**

| SPECIMEN SIZE | PRESERVING TIMES |
|---|---|
| Up to 18mm | 10 days |
| Up to 35mm | 15 days |
| Up to 50mm | 20 days |
| Up to 62mm | 25 days |

**FINAL STAGE: DRYING AND CLEANING**

For the final stage of chiton specimen preparation you will need drying trays; anything flat and nonabsorbent will do. As you remove each chiton from the preserving jar, pat it dry with a soft cloth to remove any excess "goop." When you have removed all of the chitons you can discard the preserving solution as you will need a fresh batch the next time.

Lay your chitons out on the drying trays. Once dry they should feel like rubber and the mantle and soft parts will remain flexible. You can now perform any final cleaning that may be required. Usually a soft bristle toothbrush will suffice, but you may need to use a pin or dental pick on stubborn areas of the more intricate structures. The chitons can be quickly rinsed in fresh water, but use caution as glycerin is water soluble. If you do need to rinse any in water, do so quickly and immediately pat them dry. All specimens must be completely dry before being put into storage or on display.

I would like to thank Dan and Hiromi Yoshimoto for their inspiration to write this piece and the beautiful photographs they took of our collection. If you have any questions about this procedure, please feel free to give us a call.

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Port Hardy, BC
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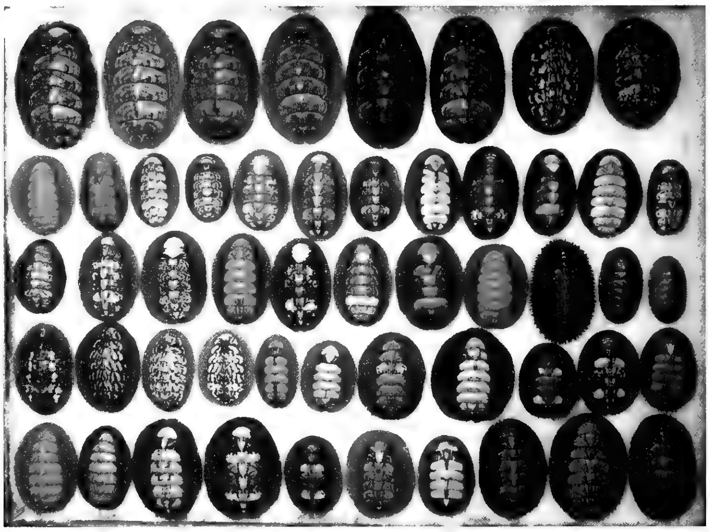
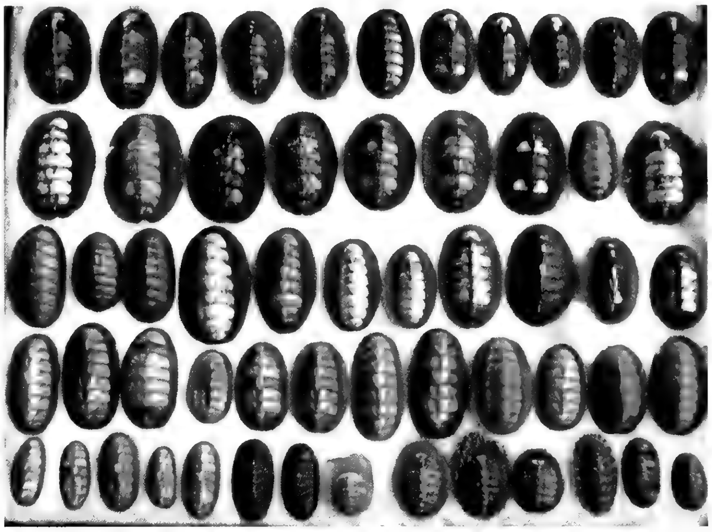
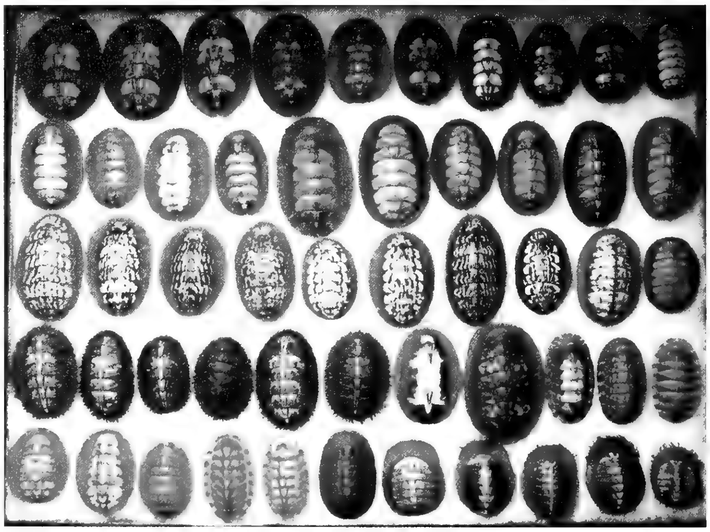
## Some of the chitons collected by Graham & Susanne Jeffrey. Photos by Dan Yoshimoto.



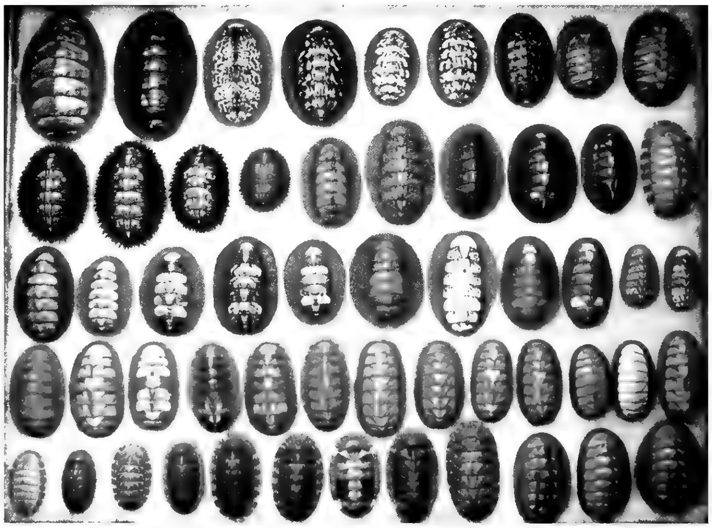
Row 1 (left to right): 1-6 *Mopalia hindsii* (Reeve, 1847) 67-75mm; 7-8 *Mopalia lignosa* (Gould, 1884) 58-62mm.
Row 2: 1-12 *Mopalia swanii* Carpenter, 1864, 45-48mm.
Row 3: 1-8 *Mopalia swanii* 41-50mm; 9 *Mopalia muscosa* (Gould, 1846) 58mm; 10-11 *Tripoplax trifidus* Carpenter, 1864, 34-40mm.
Row 4: 1-4 *Mopalia lignosa* 40-52mm; 5-11 *Mopalia ciliata* (Sowerby, 1840) 40-50mm.
Row 5: 1-6 *Mopalia ciliata* 46-60mm; 7 *Mopalia vespertina* (Gould, 1846) 43mm; 8-10 *Mopalia spectabilis* Cowan & Cowan, 1977, 53-58mm.



Row 1 (left to right): 1-11 *Mopalia ferreirai* Clark, 1991, 40-52mm.
Row 2: 1-9 *Mopalia ciliata* 42-55mm.
Row 3: 1-3 *Tonicella insignis* (Reeve, 1847) 40-52mm; 4-7 *Mopalia swanii* 42-57mm; 8-11 *Mopalia vespertina* 42-50mm.
Row 4: *Tonicella lineata* (Wood, 1815) 35-58mm.
Row 5: 1-5 *Tonicella undocaerulea* Sirenko, 1973, 30-37mm; 6-7 *Lepidozona cooperi* (Dall, 1878) 32-34mm; 8 *Placiphorella rufa* S.S. Berry, 1917, 30mm; 9-11 *Placiphorella velata*, 30-38mm; 12-14 *Lepidozona mertensii* 28-37mm.

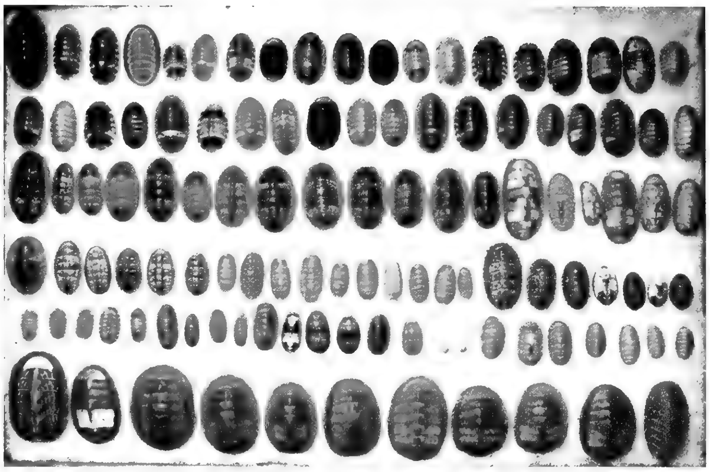


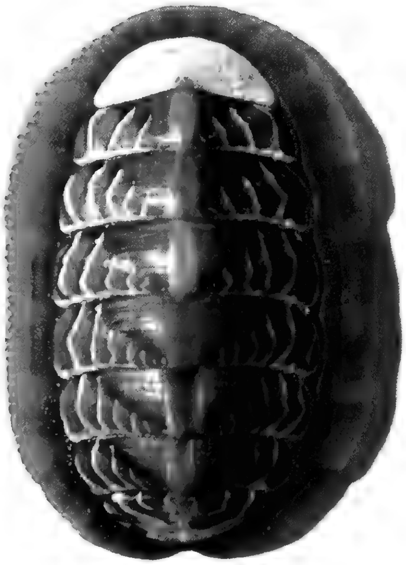
Row 1: (left to right): 1-9 *Mopalia ciliata* 43-60mm.
Row 2: 1-4 *Mopalia ciliata* 41-55mm; 5-10 *Mopalia spectabilis* 48-65mm.
Row 3: 1-11 *Mopalia lignosa* 40-60mm.
Row 4: 1-6 *Mopalia muscosa* 35-58mm; 7-8 *Mopalia vespertina* 50-65mm; 9-11 *Lepidozona mertensii* (Middendorff, 1847) 48-50mm.
Row 5: 1-3 *Mopalia swanii* 42-45mm; 4-6 *Tripoplax trifidus* 43-47mm; 7-11 *Placiphorella velata* Dall, 1879 32-40mm.



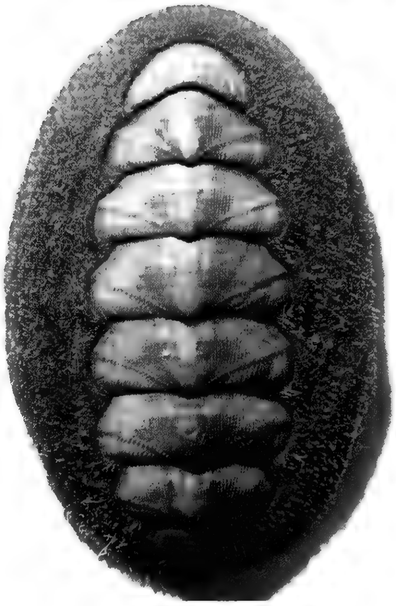
Row 1 (left to right): 1-2 *Mopalia hindsii* 72-75mm; 3-7 *Mopalia lignosa* 45-60mm; 8-9 *Placiphorella velata* 44-50mm.
Row 2: 1-4 *Mopalia muscosa* 35-58mm; 5-6 *Mopalia spectabilis* 48-57mm; 7-9 *Mopalia vespertina* 43-50mm; 10 *Tripoplax trifidus* 54mm.
Row 3: 1-6 *Mopalia ciliata* 58-60mm; 7-11 *Mopalia swanii* 33-56mm.
Row 4: 1-13 *Tonicella lineata* 43-52mm.
Row 5: 1-9 *Lepidozona mertensii* 32-53mm; 10-12 *Tonicella insignis* 48-50mm.

Row 1 (left to right): 1-19 *Ischnochiton intersectus* (Gould, 1846) 13-30mm.
Row 2: 1-19 *Ischnochiton intersectus* 18-23mm.
Row 3: 1-13 *Basiliochiton flectens* (Carpenter, 1864) 18-30mm; 14-19 *Tonicella undocaerulea* 17-32mm.
Row 4: 1 *Mopalia egretta* Berry, 1919, 23mm; 2-6 *Mopalia cirrata* Berry, 1919, 16-21mm; 7-16 *Mopalia imporcata* Carpenter, 1864, 15-20mm; 17-19 *Mopalia sinuata* Carpenter, 1864, 19-26mm; 20-23 *Schizoplax brandtii* (Middendorff, 1847) 11-15mm.
Row 5: 1-5 *Lepidozona retiporosa* (Carpenter, 1864) 11-13mm; 6-10 *Chaetopleura gemma* Dall, 1879, 13-19mm; 11-15 *Lepidochitona dentiens* (Gould, 1846) 14-18mm; 16-17 *Leptochiton rugatus* Carpenter in Pilsbry, 1892, 5-7mm; 18-24 *Tonicella rubra* (Linnaeus, 1767) 11-17mm.





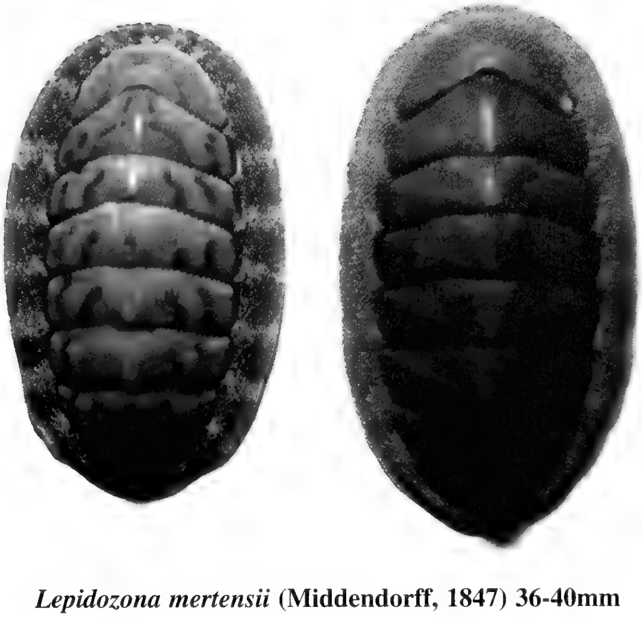
*Tonicella lineata* (Wood, 1815) 38mm



*Mopalia ciliata* (Sowerby, 1840) 50mm

*Mopalia spectabilis* Cowan & Cowan, 1977 50mm

*Tripoplax trifidus* Carpenter, 1864 46mm



*Lepidozona mertensii* (Middendorff, 1847) 36-40mm

# MADAGASCAR

By
Neil E. Fahy

The world's four largest non-continental islands are Greenland, New Guinea, Borneo, and Madagascar. Of these, Madagascar is the most varied in climate, vegetation, and animal life. It lies off the east coast of Africa across the Mozambique Channel, at roughly 44° to 50° east longitude and 12° to 25.5° south latitude, and is about 1,000 miles long and 350 miles wide. The official languages of the Republic of Madagascar, which occupies the entire island, are Malagasy and French.

The land snail fauna of Madagascar, as reported in *Fauna de Madagascar* (vol 80, 1993 and vol 83, 1994), consists of 511 species[1], of which only 50 (10%) are introduced or not restricted to Madagascar. The remaining 461 species (90%) are endemic. Madagascar has been an isolated island for at least 50 million years, which accounts for the high endemism.

Madagascar's land snails are not brightly colored, but many are large. Of the 461 endemic species, adult shells of 102 (22%) measure 30mm or greater in height or width. Of these, 75 species (74%) are wider than tall. Cuba, with 1,299 species, has only 16 large-shelled (greater than 30mm) species (1%).

For readers unfamiliar with land snail classification, they fall into two easily distinguished groups: the prosobranch operculates with gills and the pulmonates with lungs. An operculate snail has a structure, or operculum, that plugs the usually circular aperture of the shell (Fig 1). It has one set of tentacles with an eye at the base of each (Fig 2). The sexes are separate. In contrast, a pulmonate has no operculum (Fig 3). It has two sets of tentacles with an eye on the tip of each of the upper set (Fig 4). Pulmonates are hermaphroditic, that is, the organs of both sexes are present in the same individual.

The land snail fauna in Madagascar with adult shell measurements greater than 10 mm is dominated by three families: Pomatiasidae, Acavidae, and Helicarionidae. The operculate Pomatiasidae, with many genera, are found world-wide in the tropics. They occur along the east coast of Africa and have radiated extensively in Madagascar. For example, of the 80 species in the genus *Tropidophora*, 79 (99%) are endemic. The remaining species occurs on the nearby Madagascar satellite islands. This genus is usually associated with limestone regions.

The pulmonate acavids occur only in Africa, Australia, South America, and related islands. This is referred to as a Gondwanaland distribution. The three continents are remnants of Gondwanaland, the ancient southern hemisphere continent that existed during the Mesozoic Era. The acavid genera most often seen in Madagascar are the endemic depressed-shaped *Ampelita* (Fig 5) and *Helicophanta* (Fig 6), the helicoid-shaped *Embertoniphanta* (Fig 7); and the tall-spired *Clavator* (Fig 8) and *Leucotaenius* (Fig 9).

[1] Kenneth Emberton and K. Emberton & Timothy Pearse have published, from 1990 to present, descriptions of many smaller (less the 10mm) Madagascar species. These are not included in this paper.

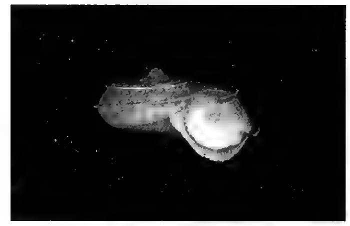


**Fig. 1** ***Tropidophora cuvieriana*** **(Petit, 1841).**

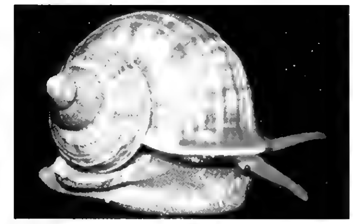


**Fig. 2** ***Tropidophora bicarinata*** **(Sowerby, 1843).**

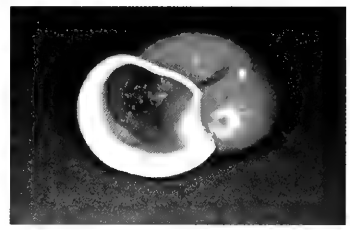


**Fig. 3** ***Ampelita xystera*** **(Valenciennes in Beck, 1837).**

**Fig. 4** ***Helicophanta souverbiana*** **Fischer, 1860.**

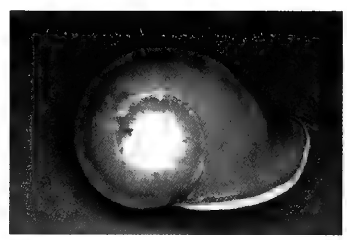


**Fig. 5** ***Ampelita xystera*** **(Valenciennes in Beck, 1837).**

**Fig. 6** ***Helicophanta ibaraoensis*** **(Angas, 1879).**

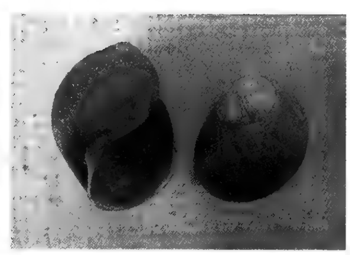


**Fig. 7** ***Embertoniphanta oviformis*** **(Grateloup, 1839).**

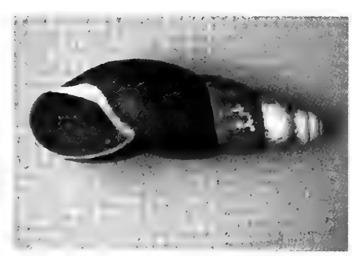


**Fig. 8** ***Clavator eximius*** **(Shuttleworth, 1852).**

**Fig. 9** ***Leucotaenius adami*** **Fischer-Piette 1963.**

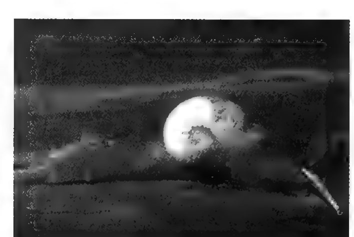


**Fig. 10** ***Helixarion malaitaensis.***

# ISLAND OF CONTRAST

**Fig. 11** ***Kalidos capurana.***

**Fig. 12 The spiny forest is a different landscape.**

**Fig. 13 Dead shells were abundant on the forest floor.**

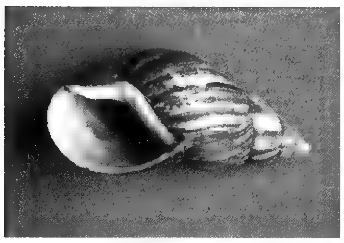


**Fig. 14** ***Achatina fulica*** **(Bowdich, 1822).**

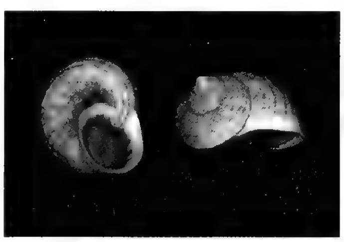


**Fig. 15** ***Tropidophora balteata*** **(Sowerby, 1873).**

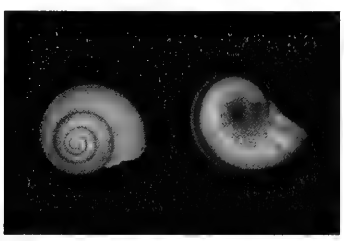


**Fig. 16** ***Tropidophora carnicolor*** **Fulton, 1902.**

**Fig. 17** ***Helicophanta vesicalis*** **(Lamarck, 1822).**

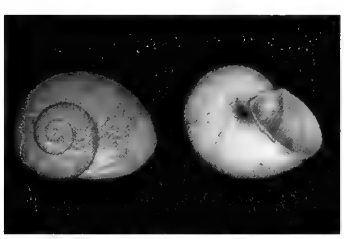


**Fig. 18** ***Kalidos balstoni*** **(Angas, 1877).**

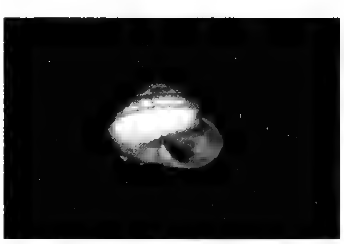


**Fig. 19** ***Kalidos piperatus*** **(Pfeiffer, 1855).**

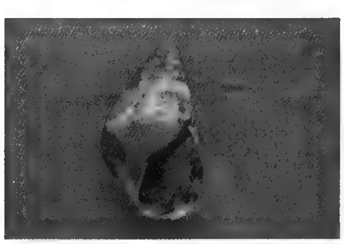


**Fig. 20** ***Rachis tulearensis*** **Fisher-Piette, 1964.**

In the pulmonate helicarionids, distributed world-wide, the animal is too large to be completely withdrawn inside the shell (Fig 10). It is believed that the snails in this family are well on the road to "slugdom." The main Madagascar genus is the endemic depressed-shaped *Kalidos* (Fig 11).

I first visited Madagascar in October and November 1998. After touring the island for three weeks collecting land snails, I spent another month with an expedition from the California Academy of Sciences (CAS) inventorying the fauna and flora of Ranomafana National Park. My accounts of the land snails from this trip appeared in American Conchologist (1999; 27(2):6-10) and on the CAS website at www.calacademy.org/research/mad. Chapter 2 of the COA article contains general land snail questions and answers. In May 2004, I returned to Madagascar with another CAS tour. Of the several regions we visited, the desert-dry Anjampolo Spiny Forest near Berenty in the south and the wet tropical Ankarana Reserve in the far north illustrate Madagascar's extremes in climate and vegetation. Both regions have very high numbers of land snail species (80-90).

**Anjampolo Reserve**

Near Berenty, in the southern part of Madagascar, we visited two second-growth spiny forests in the Berenty Reserve, characterized by heavy undergrowth. The Berenty Reserve is divided into separate sections with forest corridors between. At gates between the section boundaries, our guide showed the guard a paper allowing us to enter the next section.

The third spiny forest we visited was primary-growth in the Anjampolo Reserve north of Berenty. The Anjampolo Spiny Forest (Fig 12) was unlike anything I'd ever seen before. It looked like the set for a Star Wars movie. It differed from the second-growth forest by the absence of undergrowth.

The spiny forest (more correctly called 'thorn thicket') is characterized by thorny, water-retaining trees and shrubs endemic to Madagascar. These plants, in the family Didiereaceae, superficially resemble the cacti of our American Southwest. The two most interesting genera are distinguished by their stems. *Alluaudia* has the spines arranged in spirals; in *Didierea* they are in clustered groups.

Although we saw a radiated tortoise, a nocturnal lemur in a tree, and many birds, most important to me were the shells (Fig 13). Without undergrowth, the snail viewing was excellent.

At Anjampolo were the introduced Giant African Snail, *Achatina fulica* (Fig 14) and *Oxychilus cellarius* (Müller, 1774). *A. fulica* occurs especially near habitation. Among the endemics, *Tropidophora balteata* (Fig 15) has multiple spiral bands and *T. carnicolor* (Fig 16) has a single spiral band. Other endemics included *Helicophanta vesicalis* (Fig 17), *Kalidos balstoni* (Fig 18), *K. piperatus* (Fig 19), and *Rachis tulearensis* (Fig 20).

**Ankarana Reserve**

The 2004 tour offered a three-night excursion to the Bemaraha Tsingy (bizarre pinnacled limestone formations), located northeast of Morandava, where we would stay in a comfortable lodge. Because of damage from the March 2004 hurricane, this area was not accessible. Instead, the excursion was changed to the Ankarana Tsingy in the north where we would have to camp out. This is in a wet limestone region that would be good for snails.

In Antsiranana, our guide Angelin met our flight from the capital of Antananarivo. Our 4-wheel-drive van was loaded with camping equipment - tents, tarps, 3-inch foam sleeping pads, cooking utensils, and food. What couldn't be fitted in the rear of the van was packed on the roof. Dr. Frank Almeda, CAS botanist and tour leader, and I sat in the back. Stu, Marta and Angelin occupied the middle seat. The seat behind the driver held our carry-ons. Johnnie, our driver, and Guy, the tour manager, sat in front.

We drove south to the Ankarana Reserve, entering from the east because the more popular western road was impassable due to hurricane damage. Our campsite was at the Bat Cave Campground, adjacent to several walk-in sites. While Johnnie, Guy and Angelin set up camp, we ate a picnic lunch accompanied by many crowned lemurs and a northern ring-tailed mongoose.

About 3:00pm Angelin took us on a walk to Point de Vue d'Ambohimalaza. The trail was fairly level through lowland deciduous forest (Fig 21) with many snails (Fig 22). The largest was a 54mm high by 42mm wide shell with a 42mm high aperture (Fig 23). This large succiniform species, *Embertoniphanta oviformis* (formerly *Helicophanta goudotiana*), was the most common species seen in this area. Other snails were the ubiquitous *Achatina fulica*, *Ampelita atropos* (Fig 24), *A. subatropos* (Fig 25), (Fig 26), *Edentulina alluaudi* (Fig 27) and *E. ovoidea* (Fig 28). I also found a 100mm veronicellid slug (Fig 29).

We then walked a half mile up to a ridge from which, to the west, we could see the Grand Tsigny and the Mozambique Channel. Here I found several *Tropidophora* species that are still unidentified.

About 5:00pm it began to rain, and it was dark and pouring when we got back to camp. Guy proposed that we eat in the nearby village and stay in bungalows there, but Frank had stayed in these bungalows on a prior trip and shared his room with roaches and chickens. We voted to eat in the village and sleep in our tents.

The red clay on the rutted road to the village was quite slick and, at the halfway point, we sank in up to the axles of the van. The younger fellows tried everything including pushing to break the van loose, but to no avail. Finally, Angelin took a flashlight and went to the village for help. We stood under a tree in the rain and waited. In about ten minutes, Angelin came back in a Mercedes-Benz van driven by a fellow tour guide. A rope on the van pulled us free, and we drove to the village where Guy and Johnnie prepared beans and rice for dinner.

As it was no longer raining, we left our vehicle in the village and walked back to the campsite, seeing on the way a fringed gecko of the genus *Uroplatus* flattened against a tree trunk. My tent (Fig 30) was hot so I closed the mosquito netting but left the flap open. The sleeping pad occupied the entire floor. I slept on one sheet with another for a cover. They absorbed most of the sweat, and, although it rained a few times during the night, I slept well.

**Fig. 21 Heavy undergrowth made for a difficult trail at times.**

**Fig. 22 Empty shells were abundant.**

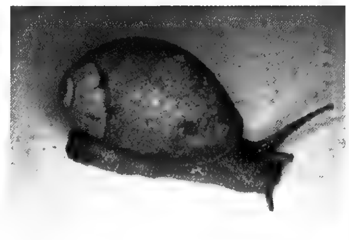


**Fig. 23 *Embertoniphanta oviformis* (Grateloup, 1839).**

**Fig. 24 *Ampelita atropos* (Ferussac, 1851).**

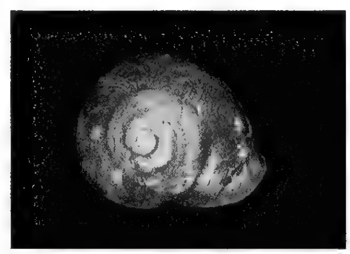


**Fig. 25 *Ampelita subatropos* (Dautzenberg 1894).**

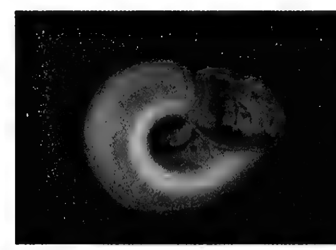


**Fig. 26 *Ampelita subatropos* (Dautzenberg 1894).**

**Fig. 27 *Edentulina alluaudi* (Dautzenberg 1894).**

**Fig. 28 *Edentulina ovoidea* (Bruguiere, 1789).**

**Fig. 29 Veronicellid slug.**

**Fig. 30 My accommodation was a two-man tent for one.**

**Fig. 31** ***Embertoniphanta socii*** **Blanc Salvat, 1975.**

**Fig. 32 The karst topography of the Petite Tsingy.**

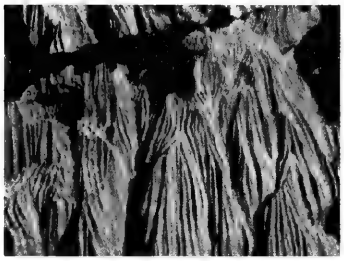


**Fig. 33 A surreal landscape of vertical limestone grooves.**

**Fig. 34 Bat Cave is at the bottom of a sink hole.**

**Fig. 35** ***Tropidophora cuvieriana*** **(Petit, 1841).**

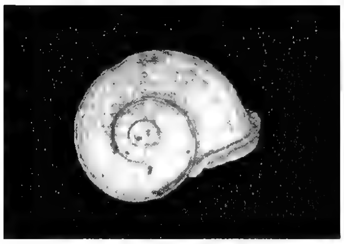


**Fig. 36** ***Tropidophora humberti*** **Fischer-Piette, 1945.**

**Fig. 37** ***Tropidophora semidecussata paulucciae*** **(Crosse & Fischer 1882).**

**Fig. 38** ***Tropidophora sp.***

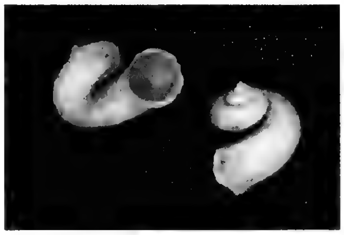


**Fig. 39** ***Tropidophora sp.***

**Fig. 40 The trail was through thin-stemmed trees.**

Our morning walk was to the Petit Tsingy and the Grotte des Chauves-souris (Bat Cave). Along the wooded trail, before we reached the limestone outcrops, were more *Achatina fulica* and a 80mm tall and 51mm wide spireless fragment of *Embertoniphanta socii* (Fig 31). This species was first described in 1975 and is considered an "uncommon shell." We also saw *Embertoniphanta oviformis*, but the occurrences of this species ended abruptly at the beginning of the limestone outcrop.

The Petit Tsingy extends along the river and has a typical karst topography (Fig 32). The vertical grooving of the limestone is very spectacular (Fig 33). The caves are at the bottom of a limestone canyon and are quite large (Fig 34). We descended to Bat Cave down a series of about two hundred concrete steps fitted between angular limestone boulders.

While the others ventured into the cave, I collected outside. The operculate genus *Tropidophora* is abundant in limestone outcrops. This outcrop was no exception. Shells of *Tropidophora cuvieriana* (Fig 35) were everywhere. Many were broken, but the operculum was still present in the sand in the aperture. This large, two-keeled species is easy to recognize. It is cited in Abbott's *Compendium of Landshells* (1989; pg 48) as "extinct," but a live specimen found "near Ankarana" is pictured in La Conchiglia (Oct-Dec 1999; pgs 56-57). I found a single 13mm by 24mm living juvenile on this trip. Judging by the quantity of dead shells I found containing opercula, more live ones should be found with diligent searching.

I collected 34 shells of *Tropidophora cuvieriana* at the Ankarana cave locality. The width of the largest was 59.7mm and the smallest was 11.2mm. When I plotted height versus width of all the shells, I got a linear correlation. If we assume that the presence of a reflected lip indicates adulthood, then it is attained when the shell is about 32mm high and 50mm wide.

In addition to *Tropidophora cuvierana*, I also found *T. deshayesiana, T. humberti* (Fig 36), *T. semidecussata paulucciae* (Fig 37), and several specimens of an unidentified species of *Tropidophora* (Fig 38). A single 18mm specimen of *Tropidophora* sp was found with open whorls (Fig 39), the body whorl being free from the penultimate whorl.

We returned to the campsite before going to the Perte de Rivières (cenote). Johnnie and Guy had taken down the camp and were ready to drive to the village where we would meet them for lunch. They wanted to leave early in case there were more problems with the road. We walked to the cenote on a dirt trail through deciduous forest (Fig 40) and encountered no limestone outcrops; but the cenote was a 50-foot sinkhole (Fig 41) in horizontal limestone (Fig 42). I saw no *Tropidophora*. Perhaps they could be found by climbing into the cenote and checking out the walls (Fig 43), but I'm too old for that.

The dry limestone stream valley feeding the cenote had been flushed of shells by the March hurricane (Fig 44). I did, however, find the freshwater snail species *Pila cecillii* and *Melanoides tuberculata* (Müller, 1774).

I'm looking forward to another trip in 2006 when we will visit the tsingys of western and northern Madagascar.

**Footnote: JUMPING SPIDER AND SNAIL SHELLS**

Outside the Arboretum d'Antsakay, east of Toliara, beneath scattered shrubs on limestone soil were many empty shells. Thinking the snail on a thin twig about 6 inches above the ground was aestivating, I took a closer look. To my surprise, the shell did not touch the stick, but was attached by spider webs (Fig 45). The aperture was plugged with a fuzzy white stuff (Fig 46) and a jumping spider (Family Eusparassidae) was inside.

The spider *Olios coenobita*, found in the bushes on the coastal plateau southwest of Toliara, uses snail shells for shelter. This spider doesn't kill the snail but lives only in the empty shell. The 18 x 30mm snail, *Ampelita chlorozona,* was actually described from a shell collected hanging from a bush by spider webs. Since the spider lives in the bushes and the shells litter the ground, the spider solves its housing problem by hoisting the chosen shell, more than 20 times its weight, into position on a silken line.

**Fig. 41 The cenote is a sinkhole in the limestone.**

**Fig. 42 The horizontal limestone is covered by forest.**

**Fig. 43 The cenote is about 50 feet deep.**

**Fig. 44 In wet weather the stream flows into the cenote.**

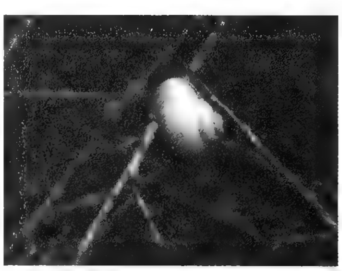


**Fig. 45 *Tropidophora ligata* held in place by a spider's web.**

**Fig. 46 *Tropidophora ligata* (Müller, 1774).**

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# Seashells of Sanibel Island

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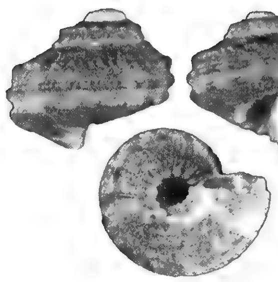
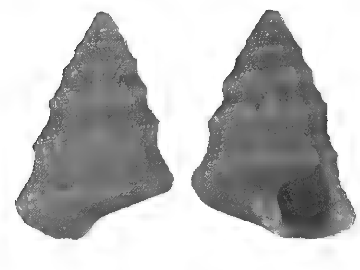
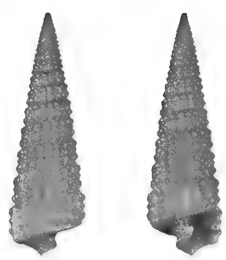


**Family Turbinidae**
***Marevalvata tricarinata*** **(Stearns, 1872) 3.5mm**

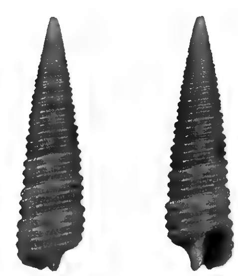


**Family Calliostomatidae**
***Calliostoma pulchrum*** **(C.B. Adams, 1850) 18mm**

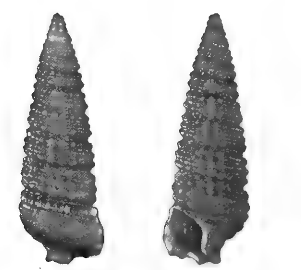
**Family Truncatellidae**
***Truncatella pulchella*** **Pfeiffer, 1839 6mm**



**Family Cerithiopsidae**
***Retilaskeya bicolor*** **(C. B. Adams, 1845) 18mm**

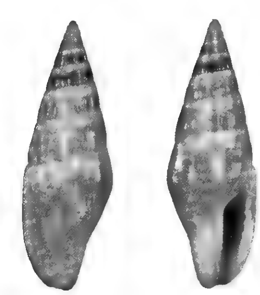


**Family Cerithiopsidae**
***Seila adamsii*** **(H. C. Lea, 1845) 13mm**

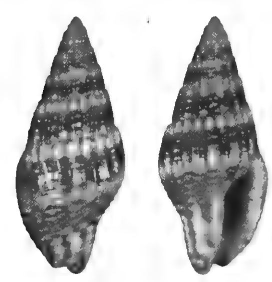


**Family Triphoridae**
***Marshallora modesta*** **(C. B. Adams, 1850) 5mm**

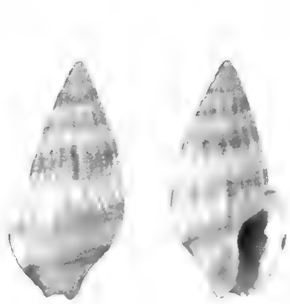
**Family Epitoniidae**
***Epitonium rupicola*** **(Kurtz, 1860) 20mm**



**Family Columbellidae**
***Costoanachis semiplicata*** **(Stearns, 1873) 16mm**

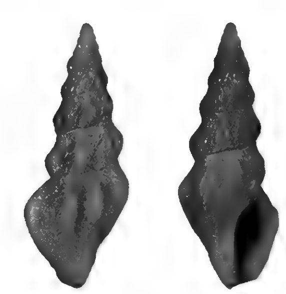


**Family Columbellidae**
***Costoanachis*** **aff.** ***sparsa*** **(Reeve, 1859) 9mm**



**Family Columbellidae**
***Parvanachis obesa*** **(C. B. Adams, 1845) 7mm**

**Family Columbellidae**
***Parvanachis ostreicola*** **(G.B. Sowerby III, 1882) 6mm**



**Family Drilliidae**
***Cerodrillia thea*** **(Dall, 1884) 13mm**

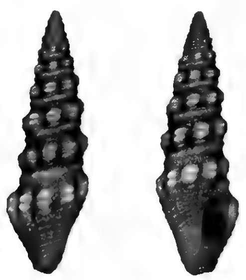
These shells from Sanibel Island are from the identification guide "Seashells of Southwest Florida" (http://shellmuseum.org/sanibel_shells.html). The guide is published online by The Bailey-Matthews Shell Museum and all shells illustrated here are deposited in the museum collection and were collected on the island. The guide illustrates and describes most shallow-water species found on the coast of Southwest Florida. Check the web site for more and come see us while you are in Sanibel!

**Additional Literature:**

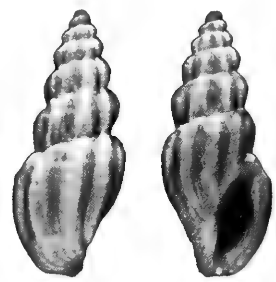

**Abbott, R. T.** 1974. American Seashells, Second Edition. Van Nostrand-Reinhold, New York, 663 pp.

**Perry, L. M. & J. S. Schwengel.** 1955. Marine Shells of the Western Coast of Florida. Paleontological Research Institution, Ithaca, 318 pp.

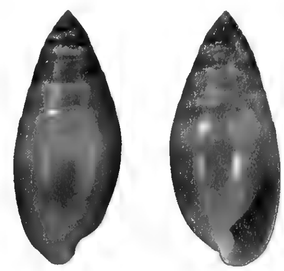
**Turgeon, D.D.** ***et al.*** 1998. Common and Scientific Names of Aquatic Invertebrates from the United States and Canada. Mollusks, Second Edition. American Fisheries Society, Special Publication 26, Bethesda, 526 pp.

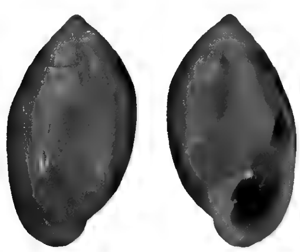
**Family Turridae**
***Pilsbryspira leucocyma*** **(Dall, 1884) 10mm**



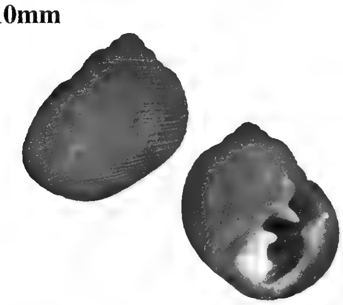
**Family Conidae**
***Pyrgocythara hemphilli*** **Bartsch & Rehder, 1939, 10mm**



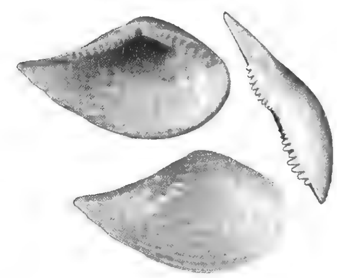
**Family Ellobiidae**
***Melampus bullaoides*** **(Montagu, 1808) 12mm**



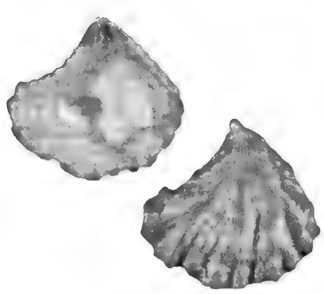
**Family Ellobiidae**
***Tralia ovula*** **(Bruguière, 1789) 13mm**



**Family Ellobiidae**
***Pedipes mirabilis*** **(Mühlfeld, 1816) 4mm**

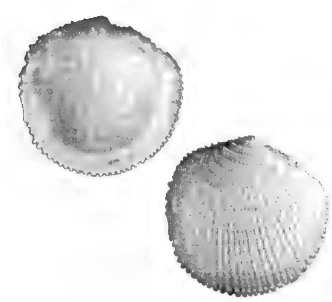


**Family Nuculanidae**
***Nuculana acuta*** **(Conrad, 1832) 4mm**



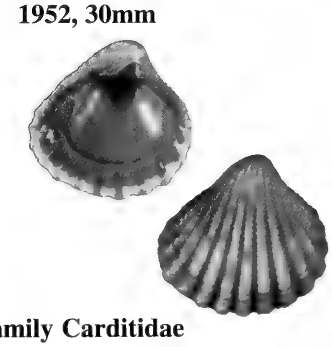
**Family Plicatulidae**
***Plicatula gibbosa*** **Lamarck, 1801, 26mm**

**Family Glycymerididae**
***Glycymeris spectralis*** **Nicol, 1952, 30mm**

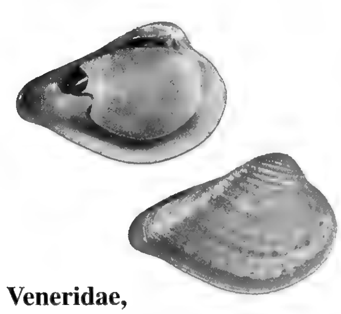


**Family Lucinidae**
***Lucinisca nassula*** **(Conrad, 1846) 14mm**

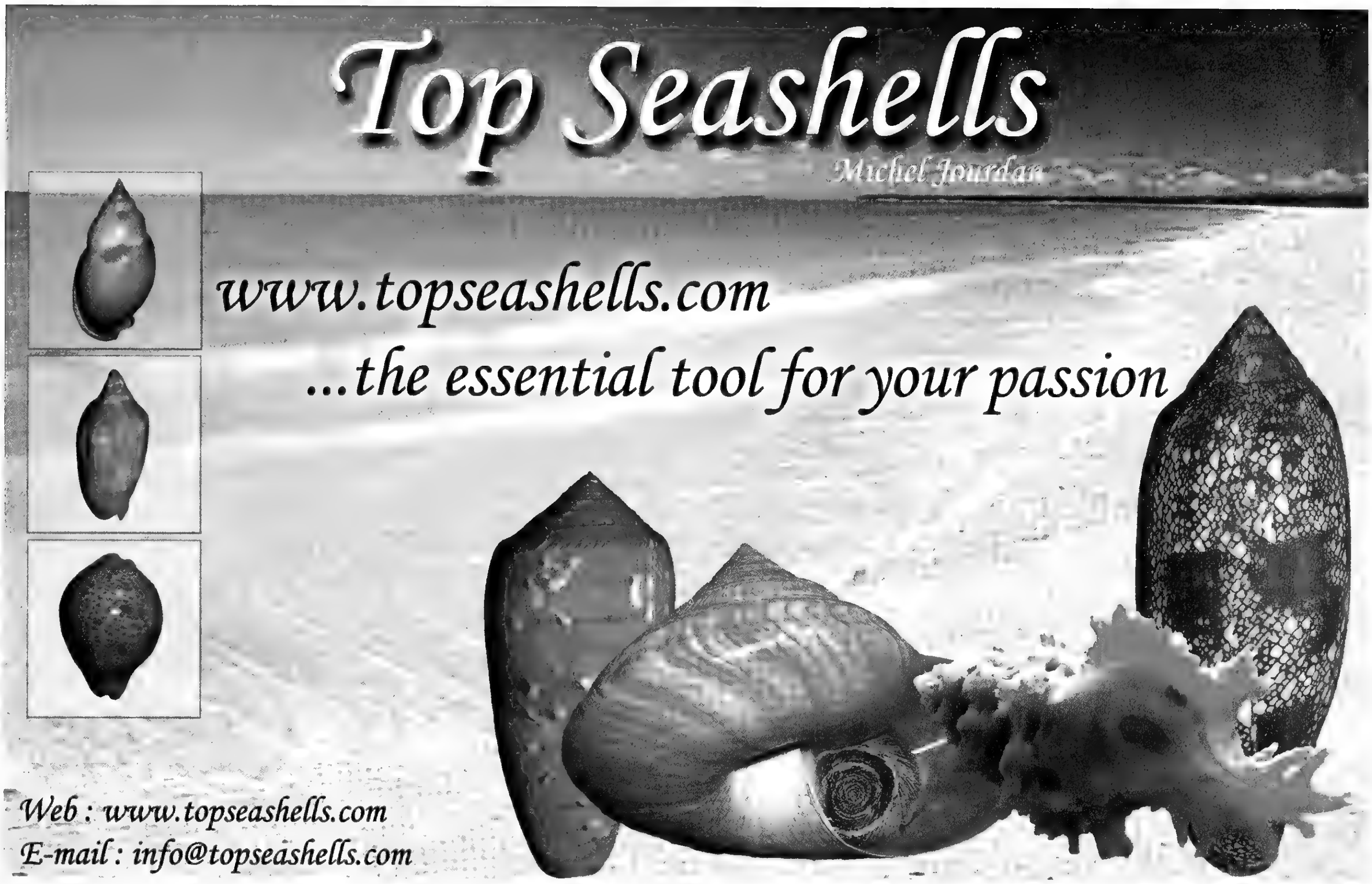
**Family Tellinidae**
***Tellina similis*** **J. Sowerby, 1806, 28mm**



**Family Carditidae**
***Pleuromeris tridentata*** **(Say, 1826) 6mm**



**Family Veneridae,**
***Anomalocardia auberiana*** **(d'Orbigny, 1842) 20mm**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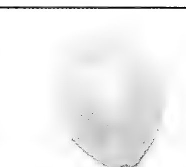





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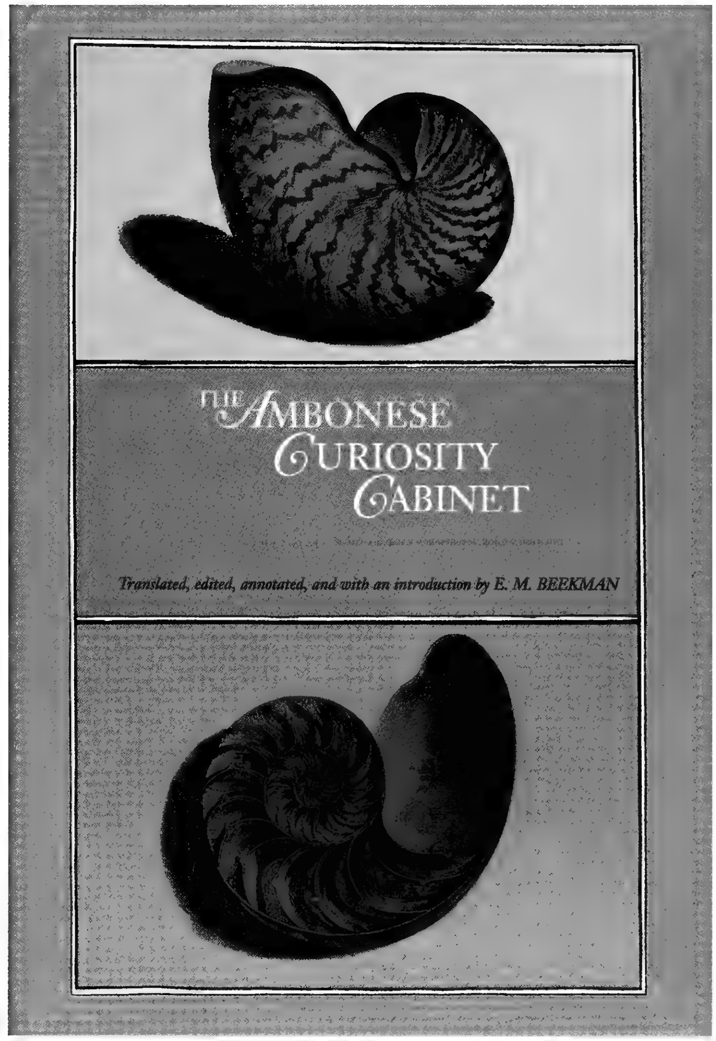
# Sorting out Linnaeus' genus *Strombus* in Rumphius

by
**Winston Barney**




It is not often that the average amateur shell collector comes into contact with the works of naturalists from the 17th century. Old and rare books are very expensive and many must be translated from German, Dutch or French. We usually purchase books with oodles of color photos and periodicals that never fail to augment and rearrange the nomenclature.

Luckily, while wandering through my favorite bookstore, I spotted a familiar title I never dreamed I would be able to own or read, *The Ambonese Curiosity Cabinet* by Georgius Everhardus Rumphius (1627-1702), translated, edited, and notated by E.M. Beekman. Published by Yale University Press in 1999, this book often sells for less than $20.00. It is greatly enhanced by the enormous contributions of H. L. Strack who organized an expedition to Ambon in 1990 in order to research and authenticate the molluscs described by Rumphius. In its 500-plus pages I found a wealth of shell history I had been unable to access before.

Rumphius was never able to see the final printed result of his many years of compiling and describing his observations. The book was completed after his death by its publisher, Francois Halma of Amsterdam, who organized the materials, adding notes to the plates. Rumphius is referred to as "his Honor" and "the Author" in these notes. Halma often added Dutch names for the shells, sometimes causing confusion, but the chart at the end of this article attempts to rectify that problem for the strombs. Most of the original illustrations were by Maria Sybilla Merian (1647-1717), but there were also several illustrations added by Simon Schynvoet (1652-1727), these figures bear a number rather than the alphabetical sequence used by Rumphius.

On first acquiring the book I impulsively flipped through the pages to find my favorite genus, ***Strombus***. I knew the word ***strombos*** in Greek referred to any spiral shell or "top," but I found that nearly all of the ***Strombus*** species named by Rumphius (which he called Needles) belonged to our genera ***Terebra, Cerithium,*** and ***Turritella***.

For example his ***Strombus primus sive subula*** (The First Strombus or the Awl) is our present day ***Terebra maculata***. Likewise, ***Strombus secundus*** (the Second Strombus) is now ***Terebra subulata***. I was intrigued by his penchant for naming the shells by number. There are eight ***Strombus*** that are numbered one through nine, with the exception of the number six: ***S. primus***, ***S. secundus***, ***S. tertius*** (the Third Strombus), ***S. quartus*** (the Fourth Strombus), ***S. quintus*** (the Fifth Strombus), ***S. septimus*** (the Seventh Strombus (probably our ***Terebra cingulifera***), ***S. octavus sive Lanceatus*** (the Eighth Strombus or the Lancer, and ***S. nonus sive granulatus*** (the Ninth Strombus or the Grainy One). I wonder why he left out number six, ***Strombus sextarius***?

In addition to the numbered ***Strombus***, he also named ***Strombus dentatus*** (the Toothed Strombus which is our ***Terebra crenulata***), ***Strombus chalybus*** (which he called the Sail Needle, but the name means "hardened iron or steel"), ***Strombus caudatus albus*** (the White Tailed Strombus), ***Strombus caudatus granulatus*** (the Grainy Tailed Strombus), ***Strombus tympanorum*** (the Drum Strombus), ***Strombus tuberosus*** (the Strombus Full of Lumps), ***Strombus angulosus*** (the Strombus Full of Corners), ***Strombus fluviatilis*** (the River Strombus), ***Strombus palustris*** (the Marsh Strombus), ***Strombus palustris laevis*** (the Smooth Marsh Strombus), and ***Strombus mangiorum*** (the Mangium Strombus, named after the tree which it frequents). Again, none of these shells belong to our current genus ***Strombus***.

So, what about the shells of ***Strombus*** Linnaeus, 1758? They are described in Book 2, Chapter 22 of Rumphius, as members of the "Main Genus" ***Alatae*** (the winged ones). The ***Alatae*** are divided into two groups, those in which the lip branches (our ***Lambis***, called Crabs in the Netherlands), and those in which the lip is even and smooth, (our ***Strombus***, called Flap whelks by the Dutch). The Flap whelks are so called "because of their big wings or flaps that are not split, and that protrude next to their mouth." Fifteen species of Linnaeus' genus ***Strombus*** (hereafter called ***our***

**Strombus**) are described in the book and there are two plates depicting fourteen of those species.

Plate XXXVI has a wonderful drawing of our ***S. latissimus*** (figure L). The shell is named ***Alata lata*** by Rumphius, meaning wide winged, but which he calls the Wide-lip. I was surprised to read that the lip of ***S. latissimus*** is sometimes hollow inside. I have never personally observed that fact and had never before read it. Halma adds that his contemporaries call this shell the big Flap whelk.

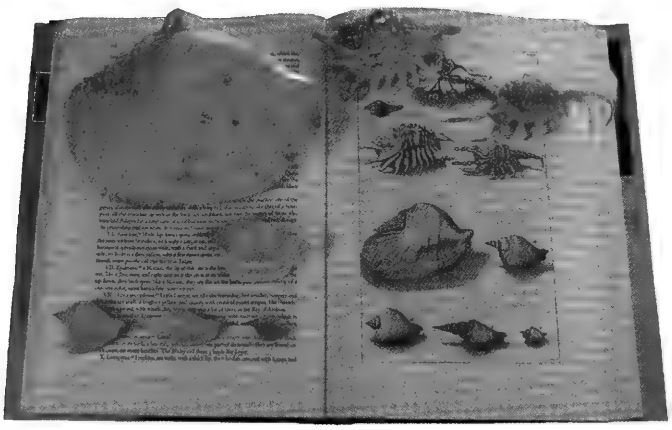


**Plate XXXVI with actual shells matching some of the Rumphius depictions. Clockwise from top left: *Strombus latissimus* L. 1758; *Lambis millepeda* (L. 1758); *Lambis scorpius* (L. 1758); *Strombus epidromus* L. 1758 (near the middle of the book); *Strombus minimus* L. 1771; *Strombus vittatus* L. 1758; *Strombus canarium* L. 1758. Photo by Tom Eichhorst.**

Figure M of this plate depicts our ***S. epidromus***, which Rumphius simply names ***Epidromis*** or **Mizzen**. In the Netherlands it was called the Little Dove. A mizzen is the fore-and-aft sail set on the mizzenmast (middle) of a sailboat. This is obviously the origin of the common name "Sail Conch" which ***S. epidromis*** is sometimes called in modern books.

Figure N is named ***Epidromis gibbosa*** (Hump-backed aft sail), which he also calls the Little Lump. This shell is our ***Strombus canarium***.

Figure O depicts the shell of another ***Epidromis*** with "narrower wings," called the rolled-up Mizzen. This is our ***Strombus vittatus vittatus***.

Figure P is the shell of ***Epidromis minima*** or Little Mizzens. The text perfectly describes our ***Strombus minimus***. Halma describes this as a smaller variety of the rolled-up Mizzen (***S. vittatus***).

The remaining nine species of Strombus depicted by Rumphius are found on Plate XXXVII. His ***Lentiginosa***, figure Q, is our ***Strombus lentiginosus***. He calls these shells Freckles, as the name in Latin means "full of freckles," but it is called Frog by the Dutch.

The shells he calls ***Pugiles*** are not the same as our ***S. pugilis***, as the name might suggest. Rumphius intended the name to refer to the sword-like operculum: "…they are so skillful with it that, if 3 or 4 are in a saucer that is filled with other whelks, they will get to fencing and clearing away until few others are left." Because of this characteristic they were given the common name Fencers. Halma, however, calls them the knobbled Flap whelks.

The author accurately describes two kinds of ***Pugiles***. The first (figure R) is our ***Strombus aurisdianae*** and the second, not figured, is obviously our ***Strombus bulla*** according to the description. Another common name applied to both shells is Pointer. This name refers to the small finger or projection at the posterior end of the lip. Rumphius relates that they are commonly eaten by the natives, but "if one eats too many of them, one will break out in a sweat that smells like that of a billy goat."

His description of ***Luhuana*** (figure S) ends for all time the myth regarding ***S. luhuanus*** being named for the Ryukyu Islands. He states very clearly that this species is collected on the shores of the Luhu region of Ceram (located on the map on page lxi). Halma calls the shell the Luhune whelk. In this description he also makes note of a characteristic common to all ***Alatae***, "to wit, a round notch in the lip around the snout." This of course is the Stromboid notch.

Rumphius states that the name ***Canarium*** refers to the shape of a peeled Kanari. The Kanari tree (botanic genus ***Canarium***) bears a fruit that looks like almonds. He describes five kinds of ***Canarium*** shells but did not give them separate names.

The first is our ***Strombus gibberulus***. Halma calls it the banded Canari. It is depicted by figure V, **not** figure T as denoted in the list of illustrations on p. xx. The second ***Canarium*** (figure T) is our ***Strombus labiatus***, called the bossed Canari by Halma. A third ***Canarium*** (figure W) is our ***Strombus mutabilis***, Halma's flowered Canari. The fourth, ***Canarium latum*** (figure X), is called the broad Canari by Halma. It is our ***Strombus marginatus succintus*** according to Strack.

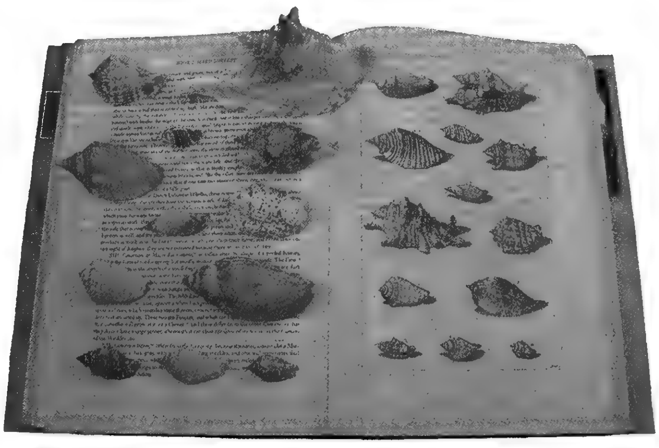


**Plate XXXVII with actual shells matching some of the Rumphius depictions. Left to right, top row: *Strombus marginatus* L. 1758 (the depiction of this shell is identified as an unknown *Voluta*, but it seems to be *S. marginatus marginatus*; *Strombus gallus* L. 1758. Second row: the orange-striped volute, *Harpulina arausiaca* (Lightfoot 1786); *Strombus gibberulus gibbosus* (Röding 1798); *Strombus aurisdianae* L. 1758. Third row: *Strombus dentatus* L. 1758; *Strombus lentiginosus* L. 1758. Forth row: *Strombus luhuanus* L. 1758; another volute, *Harpulina lapponica* (L. 1767). Bottom row: *Strombus labiatus* (Röding 1798); *Strombus marginatus succinctus* L. 1767; *Strombus mutabilis* Swainson 1821. Photo by Tom Eichhorst.**

The last of Rumphius' Canaris is named Samaar by the Dutch (figure Y). This is our ***Strombus dentatus***. He also notes that this shell is one of the Fencers. I was aware that ***S. samar*** Dillwyn and ***S. samarensis*** Reeve are synonyms of ***S. dentatus***, and have always assumed that the name referred to the island of Samar in the Philippines. However, Beekman's notes refer to a type of wood from a Moluccan tree on Ambon that Rumphius says is called "Samar." Evidently the wood from this tree turns red when freshly cut, gradually turning brown, then black if it is put in seawater. Is it possible that the shell name refers to the similarity of the aperture of ***S. dentatus*** to the wood of the "Samar" tree rather than referring to the island of Samar?

The last of the ***Alatae*** depicted on Plate XXXVII is our ***Strombus gallus*** (figure No.5) described by Halma as another Flap whelk. Rumphius obviously received this species from the Caribbean as he had many other shells in his cabinet that were collected in the West Indies.

We can see that the name ***Canarium*** was used for many shells at the end of the 17th century. When Linnaeus named ***Strombus canarium*** in 1758, he used a name that had referred to many shells in the past, probably giving no thought to what future etymologists might attempt to construe the name to mean. I have never accepted the idea that the name refers to dogs (canines) and certainly never entertained the idea of a reference to the Canary Islands (although the islands were named for their dogs). Rumphius' book certainly provides food for thought regarding the etymology of several modern day species.

Rumphius' use of a numbering system, as in ***S. septimus***, makes me wonder how Duclos applied that name when he described ***S. marginatus septimus***. Obviously, it was number seven of something. But what? Or was this another name grabbed from the past without regard to meaning?

According to the ICZN (Article 3), January of 1758 is fixed as the date of the starting point of zoological nomenclature. Therefore, none of Rumphius's names are valid today. While many of Rumphius' names were not binominal, a number of the molluscan names were binominal. Linnaeus made use of 32 unaltered names from Rumphius as well as citing a number of the illustrations in ***The Ambonese Curiosity Cabinet*** for his species descriptions. In fact, the wonderful illustrations that accompany Rumphius' text, along with the illustrations of Lister, Bouananni, and Chemnitz, were the prime references for collectors well into the 18th and early 19th centuries.

The following chart attempts to organize the species of modern-day *Strombus* figured by Rumphius along with the various names that have been applied to these species in ***The Ambonese Curiosity Cabinet***.

**Winston A. Barney**
**wbarney@spindle.net**

| Species | Rumphius' name | Common name | Dutch name |
|---|---|---|---|
| | | | |
| *S. aurisdianae* | Pugil | Fencer or Pointer | knobbed Flap whelk |
| *S. bulla* | Pugil | Fencer or Pointer | knobbed Flap whelk |
| *S. canarium* | Epidromis gibbosa | Little Lump | Flap whelk |
| *S. dentatus* | Canarium | none given | Samaar |
| *S. epidromis* | Epidromis | Mizzen | Little Dove |
| *S. gallus* | none given | none given | Flap whelk or Ruff |
| *S. gibberulus gibberulus* | Canarium | none given | Banded Canari |
| *S. labiatus* | Canarium | none given | Bossed Canari |
| *S. latissimus* | Alata lata | Wide-lip | big Flap whelk |
| *S. lentiginosus* | Lentiginosa | Freckles | Frog |
| *S. luhuanus* | Luhuana | none given | Luhune Whelk |
| *S. marginatus succinctus* | Canarium | none given | none given |
| *S. minimus* | Epidromis minima | Little Mizzen | none given |
| *S. mutabilis* | Canarium | none given | flowered Canari |
| *S. vittatus vittatus* | Epidromis | none given | rolled-up Mizzen |

# Frustrations and extension. III. On *Columbella verrilli* Dall, 1889; and a geographic extension and generic placement of *Gymnobela malmii* Dall, 1881

by Emilio Fabián García

**On *Columbella verrilli* Dall, 1881** - In June 2004, while dredging in deep water off the west coast of Florida on board the R/V "Pelican," I obtained specimens of a columbellid that I was not able to identify. I sent specimens to Dr. Harry G. Lee, of Jacksonville, Florida, to see if he could help with the identification. Harry had in his collection two specimens of the mystery species, but they were also unidentified. The specimens had been sent to him by Mr. Frank Frumar, of Indianapolis, Indiana, who obtained them in 1995 from a fisherman. They had been trawled from approximately 500m in South Rebecca Shoals, Monroe Co, Florida. Frustrated, I decided to take some pictures of the shell (Figs. 1a, 1b) and send them to Mr. Bill Frank, webmaster of the informative Jacksonville website www.jaxshells.org, to be placed at <http://www.jaxshells.org/efg8.htm>.

In January 2005 Harry Lee received an e-mail from Paulo Márcio of Santos Costa, Rio de Janeiro, Brazil. He identified the species on the website as *Columbella verrilli* Dall, 1881. To prove his point, he attached a picture of the holotype (Fig. 2), deposited at the United States National Museum. The picture did, indeed, match our mystery shells, but did not match the figure of that species that appears in Dall (1889; pl. 19, fig. 8), here shown in Fig. 3. Neither Harry nor I had checked the description of *C. verrilli* because we both had looked at the figure first and, not finding any resemblance, we dismissed this taxon as a possibility.

In reading Dall's decription of *Columbella verrilli* there is no doubt that he is describing specimens similar to the holotype (Fig. 2.). Although he establishes the variability in strength of the "transverse" (axial) sculpture of the species, he states that "it consists of from nine (on the third whorl) to fourteen (on the last whorl) sharp-edged plications running clear across the whorls...; these plications ...are strongest...at their posterior ends, at which the plication often rises into a little tubercule, which is not only appressed against but even extends over the suture" (Dall: 1881:92).

Eight years later, when Dall (1889: pl. 19, fig.8; our fig.4) figured the species for the first time, he had not changed his mind: "The specimen figured happens to be the smoothest of the lot; the more strongly sculptured specimens, taken by themselves and without the connecting links, would be thought by most naturalists to be distinct (1889:192-193)." Both "varieties" were taken together at Station 47 of the Steamer Blake's cruise. It is noteworthy that Dall changed the spelling of the specific epithet to "*verrillii*" in this report.

I have examined 14 specimens from one station off west Florida. A specimen from that lot (EFG25305) is shown in Fig.1. I also have a specimen from off Louisiana (EFG24452), collected by means of a grab box at 27°43.4'N, 91°16.74'W, in 640-680m. All conform to the ribbed "variety" of the species, with insignificant variability. Dr. Lee's two specimens also agree with the picture of the holotype.

I have not seen the material examined by Dr. Dall and, since he warned us, twice, about the apparent great variability of this taxon I cannot pass final judgement. I am glad my specimens agree with the holotype, *i. e.,* the ""sculptured variety," rather than with the "normal variety." Otherwise, I would be up a dry creek! Dall writes about the "sculptured variety" and the "normal variety," so it is rather surprising that the "variety" chosen to be the holotype was the sculptured form rather than the "normal" form.

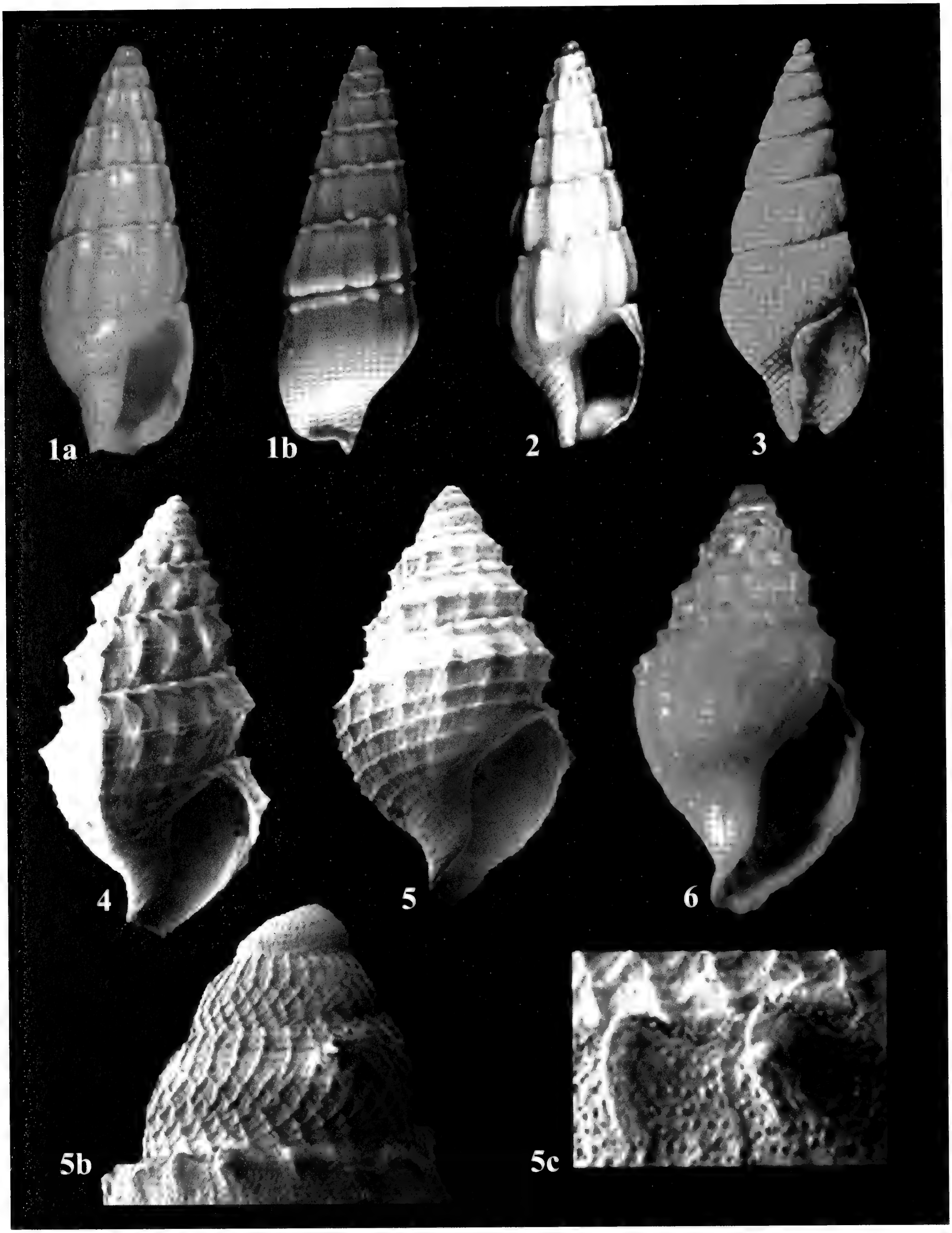
It was Dall's thinking, in his original 1881 description, that the species was most nearly allied to *Astyris rosacea* (Gould, 1841), named from Massachusetts, and he compares this taxon with "the faintly sculptured specimens" of *Columbella verrilli*. Soon after this statement, however, he states that "the strongly sculptured specimens do not at all resemble *rosacea*, except in size and number of whorls." Dall continues his rather confusing remarks by saying that one form "would usually be referred to *Anachis*" and the other as "*Astyris*, but there can be no doubt that they are forms of one species (1881:92)."

My thanks to Paulo Márcio Santos Costa, with the Department of Invertebrates, Museo Nacional, Rio de Janeiro, Brazil, for identifying the species; and to Dr. Harry G. Lee, for forwarding the identification to me and for pointing out the change in spelling of *Columbella verrilli* between Dall's two publications.

**On *Gymnobela malmii* Dall, 1889** - Many deep-water turrids with a planktotrophic larval stage are known to have unusual geographic distribution. *Gymnobela malmii* Dall, 1889 is no exception. Although its type locality is just north of Havana, Cuba, it has been reported from the eastern Atlantic, off the Açores (Azores) Islands (Bouchet & Warén, 1980:80). Two unreported localities in the northern Gulf of Mexico can be added to its geographic distribution. One specimen was dredged off Tampa, Florida, at 27°51.79'N, 84°59.82'W, in 308 - 323m (Fig. 5) (EFG25294); and a second specimen collected with a grab box in the "Bush Hill" area of hydrocarbon cold seeps off Louisiana, at 27°46.904'N 91°30.286'W, in 546-555m (Fig. 4)(EFG24054).

Dall first identified *Gymnobela malmii* as *Taranis mörchii* (Malm, 1861) (1881:70-71). Three years later, Verrill proposed the taxon, *Taranis mörchi* var. *tornatus* (1884:251) for a "variety" of his own. In his 1889 publication, Dall, realizing that both he and Verrill had misidentified their respective taxa as varieties of *T. mörchii*, introduced the taxon *Pleurotomella* (*Gymnobela*?) *tornata* var. *malmii*, thinking that his species was a variety of Verrill's *T. tornatus*. Later authors have concluded that *Taranis mörchii* (Malm, 1861), *Taranis tornatus* Verrill, 1884, and *Gymnobela malmii* Dall, 1889, are three different species. Paraphrasing Harry Belafonte, this is clear as mud but it covers the ground.

When Bouchet & Warén published their Revision of the northeast Atlantic bathyal and abyssal Turridae (1980), they re-assigned *Gymnobela malmii* to the genus *Taranis*; however, all


1a
1b
2
3
4
5
6
5b
5c

species currently assigned to *Taranis*, except "*Taranis*" *malmii*, have a direct, or lecithotrophic, larval development, i.e., their protoconch only has one to two whorls. *Gymnobela malmii* has a planktotrophic protoconch (Fig. 5b). Bouchet & Warén point out this oddity (1980:80), but give no explanation for their generic change.

The general shape of *Gymnobela malmii* resembles the general shape of *Taranis mörchii*, the type species of the genus. Both have a subspinose sculpture with a reticulated pattern on the surface of the shell, but some species of *Gymnobela*, such as *G. extensa* Dall, 1889 (Fig. 6) also have a subspinose sculpture; and although this species does not have a particularly strong reticulated pattern, *Gymnobela blakeana* Dall, 1889, and an undescribed *Gymnobela* from the hydrocarbon cold seeps off Louisiana, does.

The teleoconch of *Gymnobela malmii* has an interesting granular surface seen under SEM (Fig. 5c). The taxonomic value of this character, at least at the generic level, is questionable, as other turrid species from at least two other genera also have a granular surface.

The larval shell of *Gymnobela malmii* is very different from that of all other *Taranis*, and it is very like other *Gymnobela*. Moreover, no shell character of *Gymnobela malmii* is exclusive of species assigned to *Gymnobela*. Dall had considered *Taranis* in his original assessment of the species, but later re-assigned it to *Gymnobela*. I believe it is prudent to keep Dall's taxon in his original generic placement.

This material is based upon work supported by the National Science Foundation under Grant No. 0315995.

REFERENCES:

**Bouchet, P. and A. Warén.** 1980. Revision of the northeast Atlantic bathyal and abyssal Turridae (Mollusca, Gastropoda). Journal of Molluscan Studies, Supplement 8 1-119.

**Dall, W. H.** 1881. Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico, and in the Caribbean Sea, 1877-79, by the United States Coast Survey Steamer 'Blake,' Bulletin of the Museum of Comparative Zoology 9: 33-144.

**Dall, W. H.** 1889. Reports on the results of dredgings, under the supervision of Alexander Agassiz, in the Gulf of Mexico (1877-78) and in the Caribbean Sea (1879-80), by the U. S. Coast Survey Steamer 'Blake,' Bulletin of the Museum of Comparative Zoology 18: 1-492, pls. 10-40. [Stated date: 08 Jun 1889.]

**Verrill, A. E.** 1884. Second catalogue of Mollusca recently added to the fauna of the New England coast and the adjacent parts of the Atlantic, consisting mostly of deep-sea species, with notes on others previously recorded. Transactions of the Connecticut Academy of Arts and Sciences 6 139-294, pls. 28-32.

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**Efg2112@louisiana.edu**

## Jordan Star's Web Picks

You will perhaps notice the absence of the "star" ratings. I have decided to drop them as superfluous. A shell-related web site unworthy of a "good rating" will simply not be covered. No sense wasting magazine space. As usual, if you find a particularly interesting site that I have not previously discussed, please let me know.

Picture guide to shelf invertebrates from the northern Gulf of Mexico, http://www.gsmfc.org/seamap/picture_guide/main.htm. I would have liked it better without having to use the Adobe Reader (making going forward and back with the site a bit awkward), but you will find good pictures and a lot of information on animals of the Gulf of Mexico, not just mollusk identification. It has a simple and uncluttered layout.

COWRYS.ORG — Research into Recent Cypraea, and their origins, http://cowrys.org/. A web site on Hawaii's cowry population as well as related species. I found it could be confusing with perhaps too many links. This is a site for the diehard cowry collector.

Cone Shells-Homepage, http://coneshell.net/. This seems to be one man's fantastic site for cone collectors. It is easy and fun to use, with great pictures that are truly useful for identification purposes. The links page is exceptional. There is also a reference page. This is a clean and very nice site.

Molluscan Pictures - Home (mollusks mollusk molluscs mollusc snails), http://www.molluscan.com/index.shtml. This is an interesting site, even though there are so many links it was difficult to decide what to explore. Some pages are a little cryptic and I found it sometimes difficult to understand. A bit cluttered, but an interesting site.

SEASHELL-COLLECTOR.com, http://www.seashell-collector.com/index.htm. This is a nice site and serves well as a starting point. This site is not crowded with links, but the ones listed are well chosen. There are only thumbnail pictures, but good online articles, a dealer list, collectors list, etc.

Links work as of 5-17-05.

# 2005 SHELL SHOWS & RELATED EVENTS

**(June - December)**

**- The following information is subject to change. Please verify with individual organizations. -**

Jun. 22-26 **40th OREGON SHELL SHOW,** Portland, OR
Oregon Museum of Science & Industry, Portland
Maxine Hale, 347 N.E. 136 Avenue
Portland, OR 97230-3308
(503) 253-5379

Jun. 26-30 **JOINT AMERICAN MALACOLOGICAL SOCIETY/WESTERN SOCIETY OF MALACOLOGY MEETING,** Pacific Grove, California
Asilomar Conference Grounds, Asilomar Avenue
Dr. Dianna Padilla, Dept. of Ecology & Evolution
SUNY at Stony Brook, Stony Brook, NY 11794
(631) 632-7434
E-mail: padilla@life.bio.sunysb.edu

Jul. 2 - 3 **JACKSONVILLE SHELL SHOW,** Jacksonville Beach, FL
Jacksonville Beaches Woman's Club at 2nd Avenue N. & 13th Street
Charlotte M. Lloyd, 1010 N. 24th Street
Jacksonville Beach, FL 32250-2883
904-246-0874
E-mail: challoyd@bellsouth.net

Jul. 19-24 **CONCHOLOGISTS OF AMERICA ANNUAL CONVENTION,** Ft. Myers, FL
Sanibel Harbor Resort Hotel, Fort Myers
Anne Joffe, 1163 Kittiwake Circle
Sanibel, FL 33957
(239) 472-3151
E-mail: sanibelchiton@aol.com

Jul. 16-17 **KEPPEL BAY SHELL SHOW,** Yeppoon, Queensland, Australia
Jean M. Offord, 277 McDougall St.,
N. Rockhampton, Qld. 4701, Australia
(7) 4928-3509

Jul. 23-24 **TOWNSVILLE SHELL SHOW**, Townsville, Queensland, Australia
Cutharinga Bowls Club on Harold Street, West End
Glenda Rowse, 19 Farrell Street
Kirwan 4814, Queensland, Australia
(7) 4773-2817

Aug. 19-21 **JERSEY CAPE SHELL SHOW**, Stone Harbor, New Jersey
Wetlands Institute, Stone Harbor
Jersey Cape Shell Club, P.O. Box 124
Stone Harbor, NJ 08247
(609) 653-8017

Sept. 17-18 **26th INTERNATIONAL SHELLS & FOSSIL BOURSE,** Ottmarsheim, France
Salle Polyvalente, Rue de la Priscine
Michel Rioual, 2 Rue des Vergers
68490 Ottmarsheim, France
(3) 89-26-16-43

Sept. 24-25 **ANNUAL GERMAN SHELL FAIR**, Oehringen, Germany
KULTURA Hall, Herrenwiesenstr. 12
Kurt Kreipl, Hoehenweg 6
D-74613 Oehringen-Cappel, Germany
(7941) 62-826, fax: (7941)2065.
E-mail: meeresmuseum@t-online.de

Sept. 30 –Oct. 2 **NORTH CAROLINA SHELL SHOW,** Raleigh, NC
Ann Buddenhagen, 804 Westwood Drive
Raleigh, NC 27607
(919) 787-7103
E-mail: pabjetster@aol.com

Oct. 8 – 9 **PHILADELPHIA SHELL SHOW,** Philadelphia, PA
Academy of Natural Sciences, Parkway & 19th St.
Al Schilling, 419 Linden Ave.
Glenside, PA 19038
(215) 886-5807
E-mail: alsch@bellatlantic.net

Oct. 28-29 **SEA SHELL SEARCHERS SHELL SHOW,** Lake Jackson, Texas
The Lake Jackson Civic Center
Wanda Coker 332 Banyan
Lake Jackson, Texas 77566
(979)297-0852
E-mail: shellman7000@sbcglobal.net

Oct. 29 **BRITISH SHELL COLLECTOR'S CLUB CONVENTION,** London, England
Napier Hall, Hide Place & Vincent Street
Tom Walker, 38 Redlands Road
Reading, Berkshire RG1 5HD, England
44 (118) 987-4294
E-mail: tom@tmwalker.co.uk

Nov. 19-20 **10 th PRAGUE INTERNATIONAL SHELL SHOW,** Prague, Czech Rep.
MENZA CVUT, Jugoslavskych Partyzanu 3, Prague
Jaroslav Derka, Holeckova 51/370
15000 Praha 5, Czech Republic
42 (2) 5731 6246
E-mail: jderka@volny.cz

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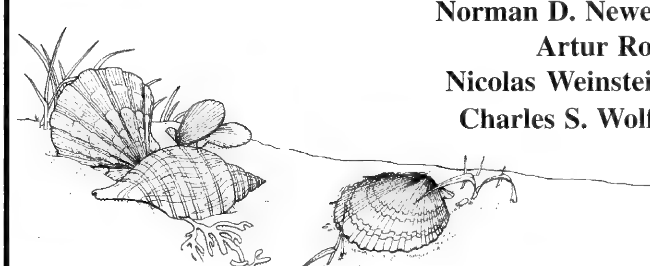
## In Memoriam:

**Sara Franklin**
**Wayne Grimm**
**Rose Killam**
**Norman D. Newell**
**Artur Roll**
**Nicolas Weinstein**
**Charles S. Wolfe**



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**BACK ISSUES** are available from Hank Foglino, Properties Director. Prices: prior to 1985, $3 each, 1985 to current, $5 each; postage extra.

# Florida and Caribbean Turridae

## part 1: Black and Brown species

by Peggy Williams

### A: "large" species (up to one inch in length)

*Pyrgospira ostrearum* (Stearns, 1872) - W Fla, bay More slender and shouldered than *tampaensis*. 23 mm

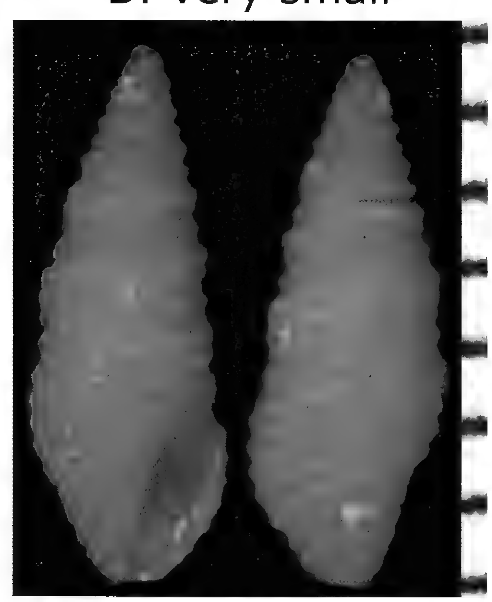
*Prygospira tampaensis* (Bartsch & Rehder, 1939) W. Fla, 50 ft depth Similar to *ostrearum.* 1"

*Strictispira solida* (C B Adams, 1850) Bay Islands, Honduas Profile distinctive, fat at shoulder, sharply narrowing above and below. 20 mm

*Crassispira fuscescens* (Reeve, 1843) W Fla Large and heavy (1" or more), with strong ribs, usually lighter between ribs.

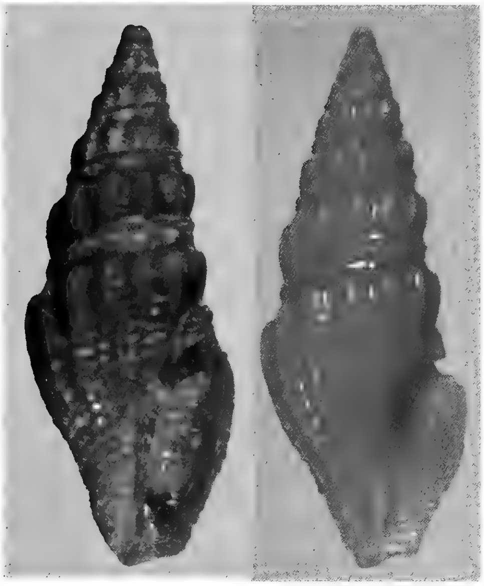
*Zonulispira crocata* (Reeve, 1845) W Fla 1" or more, strong spirals, sculpture distinctive. *sanibelensis* Bartsch & Rehder, 1939 is synonym.

### B: very small

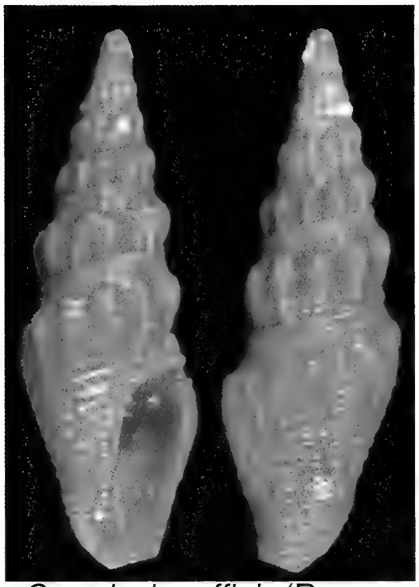


*Crassispira nigrescens* (C B Adams, 1845) 7 mm Wide, channeled sinus scar. May be black-beige or striped. 6 mm

# B: 1/2-3/4 inch species



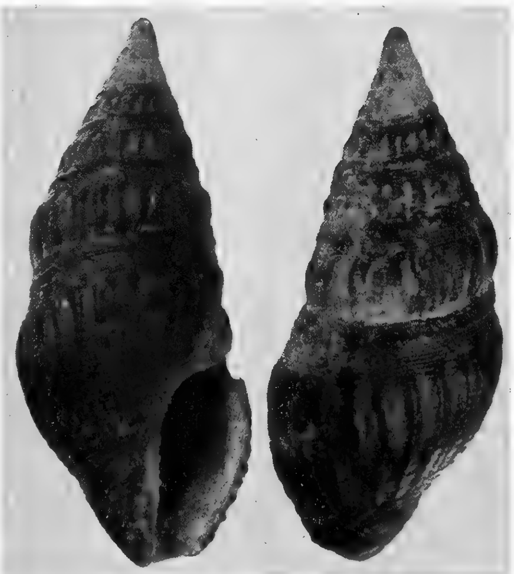
*Strictispira acurugata* (Dall, 1890)
L: Fla Keys; R: Abacos, Bahamas
Strongly excavated area below shoulder w/ 1 strong spiral. 21 mm



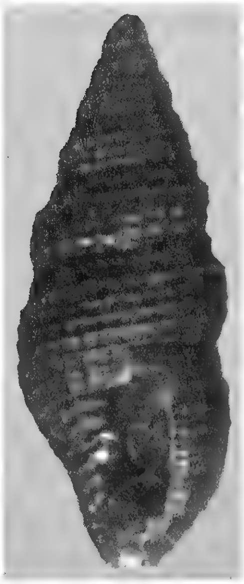
*Crassispira affinis* (Reeve, 1846)
Similar to *acurugata* without the strong spiral. More slender. 18 mm

*Crassispira guildingi* (Reeve, 1845) St Vincent
8 mm, pitch black. I have not seen this species.

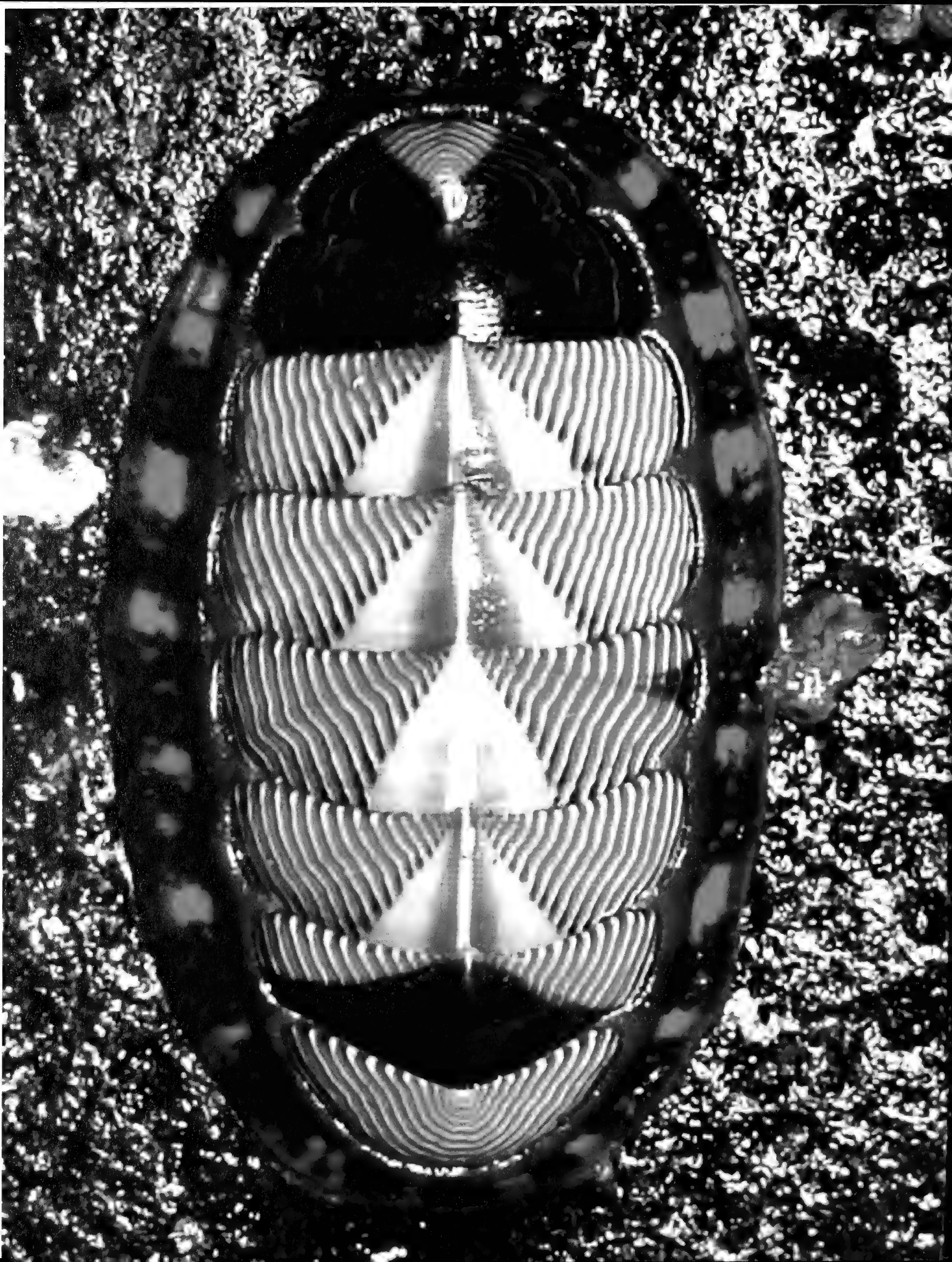
*Crassispira apicata* (Reeve, 1845)
Sinus scar under shoulder flat and shallow. Sculpture flat. 15 mm



*Strictispira paxillus* (Reeve, 1845)
Puerto Rico
Smaller than *Solida*, with nippled protoconch and concave whorls. Profile distinctive. 14 mm



*Crassispira pellisphocae* (Reeve, 1845)
Axial & spiral sculpture equal strength. Spire high. 8 mm



Vol. 33, No. 3, September 2005
thomas@rt66.com http://conchologistsofamerica.org

# American CONCHOLOGIST

Quarterly Journal of the Conchologists of America

# CONCHOLOGISTS OF AMERICA, INC.

Volume 33, No. 3 September 2005


In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***



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**Front cover: *Babylonia borneensis* (Sowerby, 1864), 46mm. Back cover: *Oliva porphyria* (Linnaeus, 1758). A spectacular image of the live animal by Charlotte Lloyd-Thorpe. More of Charlotte's photography can be seen in the next issue.**

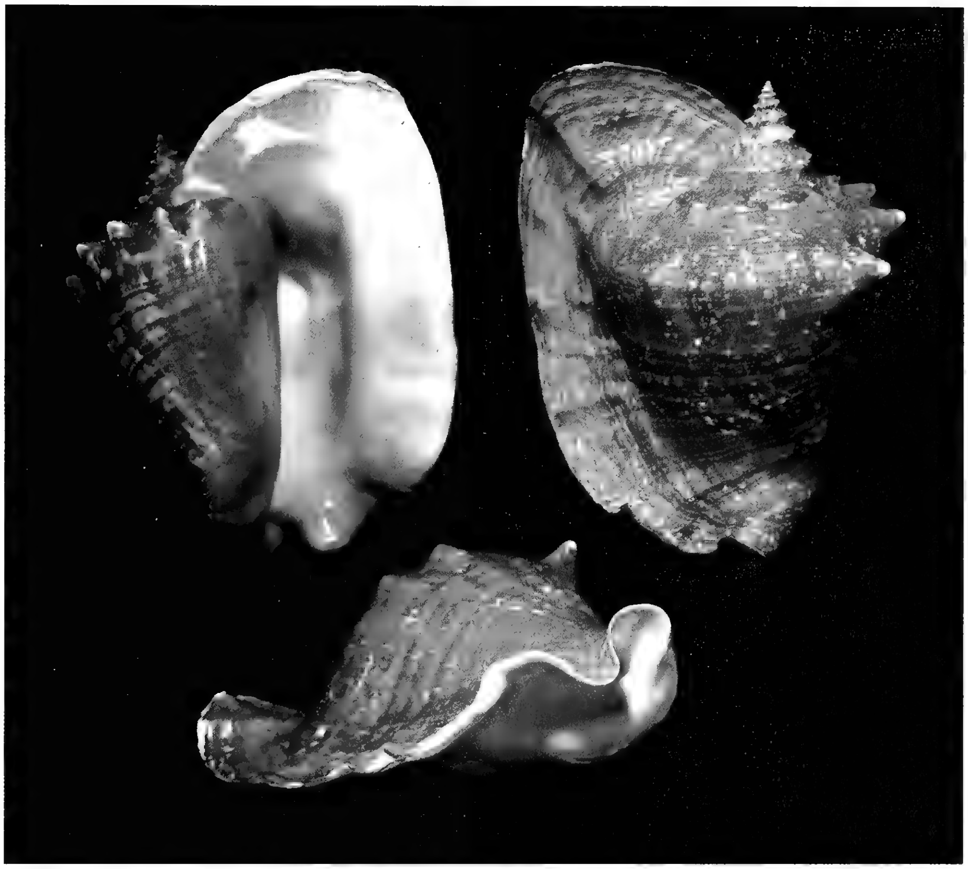
**CORRECTION:** On page 3 of the last issue, the illustration of *Pedicularia decussata* (Gould, 1855) was correctly identified by Dr Felix Lorenz who states, "...p. 3 shows a labrally distorted specimen of a cowry, probably genus *Erosaria*. Note the terminal ridge and two fully formed anterior columellar teeth, both features never found in *Pedicularia* (although some males of certain species have a sort of columellar dentition). Such cowry-freaks with a flange formed by the labrum are quite abundant in certain areas. They are easily recognized as Cypraeidae by the formation of the anterior columellar area, which is never modified even in extremely distorted shells. The posterior canal in such shells never exceeds the protoconch, opposed to *Pedicularias* in which the protoconch in adult shells is always situated somewhere towards the middle of the shell." The image in question was added by the editor and was not reviewed by the author, Dr Robert Robertson, prior to its inclusion. Dr Robertson referred readers to Abbott (1974, p. 151) for illustrated adult shells of *P. decussata.* I thank Dr Robertson for understanding and Dr Lorenz for the correction.

# LARGE CONCHS (*STROMBUS*) ARE ENDANGERED HERBIVORES HAVING MANY PREDATORS AND NEEDING DENSE POPULATIONS OF ADULTS TO REPRODUCE SUCCESSFULLY

**Robert Robertson**

**(photos by the author)**

Strombid conchs are marine, shallow water, definitely herbivorous, often sand-ingesting gastropods that live on sandy or grassy substrates in sand-veneered or algae-covered rock bottoms. The maximum known depth of a living conch in the West Indies is 61m (*Strombus gigas* Linnaeus, 1758, in the Virgin Islands). This and several other species in the family Strombidae elsewhere are among the largest known herbivorous gastropods, but there are numerous much smaller and less endangered strombid species with probably the same modes of life. Some of these live on mud. Strombids are herbivores from their planktonic larval stages to adulthood. None are carnivores, or scavengers feeding on dead animals. Conchs are low in the food web, and the worst predator on large adult conchs is now *Homo sapiens* Linnaeus, 1758.



**Above: *Strombus gigas* Linnaeus, 1758, the queen or pink conch from the Caribbean. This is a fresh specimen (slightly over 200mm) showing the intact periostracum and intense colors.**

**Below: *Strombus gigas, in situ* in a bed of turtle grass.**

The "soft parts" (viscera) of *Strombus* are permanently hidden within the shell spire. They are revealed when shell apices are broken open or when the whole body is removed from the shell by slithering it out spirally after the single columellar muscle is severed. This muscle is the only firm attachment of the animal's body to its shell. Fishermen are skilled at cutting the muscle near its attachment using a knife thrust through a short slit in the shell. This slit is made with a hatchet opposite and at exactly the right place, outside and above the spines (if present) on the penultimate shell whorl. Nowadays, there is a special tool that does not damage the shell.

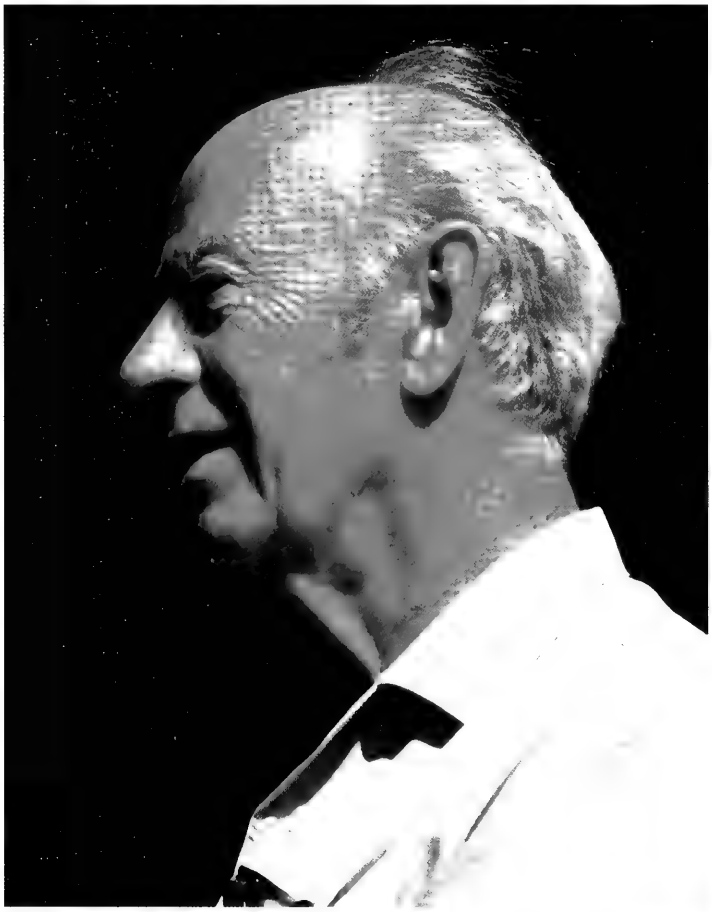
Excepting only the soft viscera, the remainder of the body, including that attached to the shell columella, is strongly muscular. The creeping sole of the foot functions as such only when juveniles crawl on or up solid surfaces such as aquarium walls. In the adult, locomotion is brought about by the operculum attached near the blunt end (posterior) of the underlying foot muscles and modified into a scythe-like shape with a pointed tip. The animal "leaps" forward in jerks, first thrusting the pointed end of the operculum into the soft substrate beneath the animal's head. The pointed end of the operculum is then sunk deeper into the substrate, then moved towards the animal's posterior, suddenly contracting and pushing

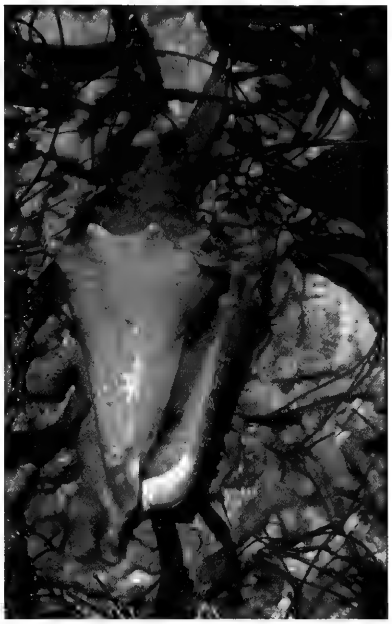
**Above: The milk conch, *Strombus costatus* Gmelin, 1791, ranges from Florida to Brazil. This image clearly shows the eyestalks and the operculum. While not used as a weapon, the shape of the operculum, combined with the sometimes wild gyrations of the animal when removed from water, led many authors to list it as such.**
**Below left: The fighting conch, *Strombus pugilis* Linnaeus, 1758, showing the protective spines.**
**Below right: Sir Charles Maurice Yonge, British marine biologist who wrote on the feeding habits of *Lambis*.**

the whole animal forward as it does so. The operculum is then drawn back to near the head, and the process can then repeat itself. For defense, the operculum can only partially close the shell aperture. There is no compelling evidence that it is used aggressively.

*Strombus* is heavily attacked and eaten by so many predators that it has for its defense some special anatomical and behavioral traits. Adult *S. gigas* shells are large and spiny, and are not easily overcome except by large predators. Conchs move faster than some of these that are bottom dwellers, and the adult shells have high breaking strengths. Also, conchs have 'safety in numbers.' Conchs are especially watchful with their eyes. When very newly collected and kept alive in seawater or air, strombids are very active and sensitive, and wave the pointed operculum around. Most of a large conch's body is so active and muscular that its operculum on occasions injures human skin, causing shallow cuts that bleed. This may have contributed to the idea that conchs are carnivores that attack their prey.

The scientific name of the western Atlantic "fighting" conch is *Strombus pugilis* Linnaeus, 1758. In Latin *pugilis* means a boxer or fighter. The name and idea date from naturalists well before Linnaeus, and the scientific and common names persist to this day. The International Code of Zoological Nomenclature (ICZN) requires that scientific names be retained even if they are discovered to be inappropriate, so *pugilis* is still the proper scientific species name. Worldwide in the tropics and subtropics, Abbott (1960: 36) estimated that there are 50 living species of *Strombus*. A few more valid species have been named since then. The species attaining the largest sizes is *S. goliath* Schröter, 1805, of Brazil.





**Left: juvenile *S. gigas* with its protective covering of periostracum and algae.**
**Right: The same shell as it appears if dropped, showing the brightly colored ventral surface.**

The closely related genus *Lambis* is similar to *Strombus* but has about 6 to 8 long spines extending outward from the adult (flared) outer lip (Vermeij, 1993: pls. 1-2). *Lambis* may, in fact, be so closely "related" to *Strombus* that it evolved from two or more lineages that developed these multiple spines convergently (see Vermeij, 1993). In other words, *Lambis* may not be a natural, distinct group separate from *Strombus*. The long lip spines may be defensive as are *Strombus* spire spines, but biologically the two genera seem otherwise almost identical. They certainly are so as regards feeding.

While on a long expedition to the Great Barrier Reef of Australia, the renowned British marine biologist Sir Charles Maurice Yonge discovered that a *Lambis* Röding, 1798 (then called "*Pterocera*"), probably *L. lambis* (Linnaeus, 1758), is herbivorous, gently nibbling on fine algae. It also ingests detritus of plant origin and, accidentally, much sediment. There is a concentric (sphincter) muscle in the gut that lets through only the finer sand and mud particles. The larger particles are regurgitated via the mouth. The feces of both "genera" comprise predominantly these fine sediments in small packets, with these compacted into thick, easily broken rods (Yonge, 1932a). Yonge also observed the crystalline style of *Lambis* and *Strombus*. This is a rotating rod that projects into the stomach and releases digestive enzymes. These would not help to digest animal tissues, and a carnivorous gastropod and a crystalline style very rarely co-exist (e.g. some Nassariidae). Conch styles are still called "conch pistols" by Bahamian fishermen, who believe them helpful for male potency. Crystalline styles exist in many herbivorous prosobranch gastropods (Yonge, 1932b).

Slightly less than half a century ago, I was doing field and marine laboratory work on living *Strombus* in the Bahamas and southern Florida. Unless turned over, the living conch's aperture faces downward. After an adult conch (with a flared outer lip) has dropped through water it always comes to lie aperture-up on the bottom. When the aperture is directed upward it is conspicuous, as the animal is multi-colored and the aperture bright pink and yellow. During this situation there is little protection against large predators. *In situ*, the other (upper) side is well camouflaged. Conchs have a strong "righting" response. If and when A shell is somehow overturned, it quickly turns back to aperture-down, with its pointed operculum and muscular foot, much as it does in locomotion. Thus the "righting response" is used defensively, not to attack prey.

Strombid eyes are well developed and lens-bearing and are surrounded by, perhaps species-specific, concentric rings of various bright colors. The eyes are on thick optic peduncles, with the thin, short, and attenuated true tentacles attached about mid-point on the inner sides. The right eye can be positioned in the shell's "strombid" or "stromboid" notch (part of a conch, not resembling one), a concavity near the anterior end of the flared and thickened outer shell lip. The left eye is most often placed in the shell's anterior siphonal canal, but one or both eyes can lie together in the same strombid notch. Normally, both eyes are directed upwards or laterally, not ventrally or towards "prey". *Strombus* is very sensitive, and is always on the lookout for danger. A sudden lowering of light intensity such as would be caused by a dark cloud or a large predator overhead causes the whole conch to react suddenly, withdrawing its body farther into the shell. This is called a "shadow" or "escape" response.

Four of the five species of *Strombus* in the Bahamas and south Florida are now known to feed in the same manner as *Lambis*, gently grazing on and ingesting micro- and macroalgae, detritus of plant origin, perhaps live or dead turtle-grass leaves (*Thalassia testudinum* Banks & Soland. ex Konig, 1805), and sediment particles with detritus attached. I began reporting this in 1961, and most malacologists and marine biologists since then have confirmed this. Berg (1974: 284) apparently was the first to publish confirmatory field and lab evidence on *Strombus* herbivory ("No feeding attempts occur if algae are not present"). Regarding *S. pugilis*, Berg (1975) also stated, "Various algal species scraped from hard surfaces in the intertidal zone were added periodically to the [lab] water table and were accepted by the conchs as food items." Conchs have been observed on fish carcasses, but I believe that herbivory in strombids is now very well established.

Bradshaw-Hawkins & Sander (1981) quoted Berg (1975) about the herbivory of *S. pugilis*, but they also reported "combative tendencies" between males, and "male[s] guarding" (gathering?) between copulating pairs, presumably affording protection from predators. They reported one to three other males sometimes with one female still laying eggs, "sometimes with concurrent copulation," but this may have meant only that a male "suitor" could "sometimes" have been copulating, and that the other one or two were unsuccessfully competing, not copulating much or at all (Randall, 1964; Brownell, 1977). The interacting males were reported to "spar" with their proboscises, opening their mouths and baring parts of their moving radulae. These observations could have been based on two or more males competing for one female, or one feeding on the algae growing on another shell, with or without mouth openings. When "energized", other gastropods do this even while not feeding. Sometimes, an egg-laying female *S. gigas* has been observed in contact with two or more males. The operculum

Above: Common spider conch, *Lambis lambis* (Linnaeus, 1758), showing the placement of the eyestalks (inset shows a slightly magnified view of the right eyestalk.

Below: A close-up of *S. costatus*, showing the true tentacles and the well-developed eyes at the end of thick optic peduncles.

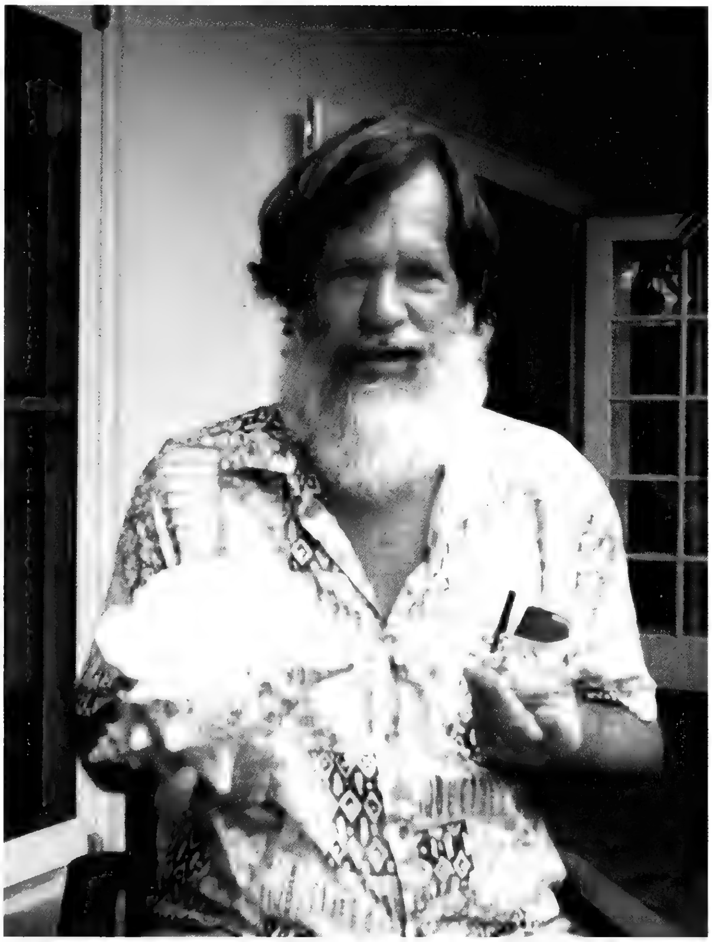
was not mentioned in any of the descriptions of these *Strombus* encounters. Opercula could be used as offensive weapons for "attack", but there is no evidence for this. Beliefs about conch carnivory must have been based on misunderstood behaviors primarily connected with defense or righting. As late as 1988, conchs were still being reported as predators, e.g. "feeding on the mollusks buried in the grass beds" (Diehl and others, 1988: 18).

In adult females, an inconspicuous external female genital groove runs from the uterus to the right anterior corner of the foot. All adult males have a penis attached nearly in the same position as the uterus of females, but there is no external genital groove as in females. Female shells average larger than male shells, and when breeding they commonly form sexual pairs. Some female *Strombus* (*S. pugilis* among other species) can be "masculinized" (Reed, 1993, 1994), with "a small, underdeveloped, often deformed verge" [penis], apparently the same condition as that called "imposex" in the few other gastropods (e. g. some muricids) in which it is known. It is due to human-caused chemical pollution. These animals function as females but appear to be males. These three "forms" hinder accurate sexing of some animals, especially those not fully mature and without fully formed, flared outer lips.

If undisturbed by man or other predators, conchs form large colonies with individuals in relatively high densities. For successful reproduction, densities have to be high. Close juxtapositions of pairs are vital (Stoner & Ray-Culp, 2000).

The larger female strombids spawn about 500,000 eggs per egg mass (my discovery, reported in 1959) in three or four batches per year. The eggs are small and in a spiral inside a long tube that when unraveled is as much as 90 ft. long. This tube is wound to and fro transversely, and is compacted into a thick crescent shape. The planktonic, drifting larval (veliger) stage lasts about three weeks. From egg to maturity, the whole life cycle of *S. gigas* is two and one half to three years long, but they probably can live to be 20 years old or more. An average of one hatchling per egg mass survives to adulthood, as the tiny planktonic larvae have diseases and predators that cull most of them. Post-metamorphosis, the remaining benthic post-larval to adult stages are culled by predators. By damaging part of this large food web, *Homo sapiens* may in this way be greatly damaging shallow water marine ecosystems throughout the Caribbean.

According to an unpublished list by Alex Tewfik of known and, unfortunately not distinguished, potential predators of *Strombus gigas* longer than 20 mm, there are 60 different species, genera, and families, plus *Homo sapiens*. There are 11 gastropods (e. g. *Fasciolaria tulipa* [Linnaeus, 1758], the "conch killer" of Bahamian fishermen), 2 octopuses, 19 crustaceans (including the spiny lobster [*Panulirus argus* Latreille, 1804] and hermit, blue, stone, and miscellaneous other crabs and shrimps), 2 polychaetes, 4 cartilaginous fishes (2 sharks and 2 rays), 21 bony fishes (including groupers, snappers, grunts, the hogfish, triggerfishes, porcupine and puffer fishes, flounders, seabasses, an eel, and the bonefish), and lastly the loggerhead turtle (*Caretta caretta* (Linnaeus, 1758)). Many of these records of predation are from animals in the field, but none is specialized to feed only on *Strombus*. Seastars, perhaps should be added. *Strombus gibberulus* Linnaeus, 1758, with the shell drastically broken open by a *Calappa* crab in Guam was illustrated by Vermeij (1993, fig. 6.12 top). Some of the smaller of these predators can overcome only the small young conchs before



**Chuck Hesse of The Caicos Conch Farm, B.W.I.**

they develop flared outer shell lips. Larger predators have to break the thick shells to gain entry to the conch bodies inside. Huge "conch piles" near human settlements testify to their former abundance. In geological time, man has, in an exceedingly short time, become by far the worst predator on conchs, but we can also culture them now in conch farms. In many places *S. gigas* and other large conchs are so fished out that they require farming.

Dr. Allan W. Stoner helpfully criticized the penultimate draft. Some of the information given above came to me orally from Chuck Hesse, CEO of The Caicos Conch Farm on Providenciales, Turks and Caicos Islands, British West Indies, the only such conch facility still existing in the world (2003). I am grateful to him for his observations and hospitality. He provided Alex Tewfik's unpublished list of predators on *Strombus gigas*.

Please order your conch meat or undamaged shells from Chuck Hesse and leave the wild ones where they are. There can be overnight delivery, and the meat lasts about two weeks in a refrigerator. Hesse's mailing address is 20900 Southwest 258 St., Homestead, FL 33031. His e-mail is conc@tciway.tc. His telephone is (649) 946-5643.

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References (Highly Selected)

**Abbott, R. T.** 1960. The genus *Strombus* in the Indo-Pacific. Indo-Pacific Mollusca, 1(2): 33-146, pls. 11-117. — 1961. The genus *Lambis* in the Indo-Pacific. Same, 1(3): 147-174, pls. 118-134.

**Appeldoorn, R. S. & Rodríguez, B.** (eds.). 1994. Biologia, Pesqueria y Cultivo del Caracol *Strombus gigas*. Queen Conch Biology, Fisheries and Mariculture. Fundación Científica Los Roques, Caracas, Venezuela. 358 pp.

**Berg, C. J., Jr.** 1974. A comparative ethological study of strombid gastropods. Behaviour, 51(3-4): 274-322, 15 figs. — 1975. Behavior and ecology of conch (superfamily Strombacea) on a deep subtidal algal plain. Bull. Mar. Sci., 25(3): 307-317, 3 figs.

**Bradshaw-Hawkins, V. I. & Sander, F.** 1981. Notes on the reproductive biology and behavior of the West Indian fighting conch, *Strombus pugilis* Linnaeus in Barbados, with evidence of male guarding. The Veliger, 24(2): 159-164, 1 fig.

**Brownell, W. N.** 1977. Reproduction, laboratory culture, and growth of *Strombus gigas, S. costatus*, and *S. pugilus* [sic] in Los Roques, Venezuela. Bull. Mar. Sci., 27(4): 668-680.

**Carstarphen, D.** 1982. The Conch Book. All You Ever Wanted to Know About the Queen Conch from Gestation to Gastronomy. Pen and Ink Press, distr. Banyan Books, Inc., Miami, Fla., [iii +] 75 pp., figs. (some color).

**Clench, W. J. & Abbott, R. T.** 1941. The genus *Strombus* in the western Atlantic. Johnsonia, [1](1): 1-15, 10 pls.

**D'Asaro, C. N.** 1965. Organogenesis, development and metamorphosis in the queen conch, *Strombus gigas*, with notes on breeding habits. Bull. Mar. Sci., 15(2): 359-416, 17 figs.

**Diehl, F., Mellon, D., Garrett, R., & Elliott, N.** 1988. A Field Guide to the Invertebrates of San Salvador Island, Bahamas. 1988. CCFL Bahamian Field Station: ii + 105 pp., many figs.

**Espinosa, J., Herrera, A., Brito, R., Ibarzabal, D., González, G., Díaz, E. & Gotera, G.** 1990. Los moluscos en la dieta de la langosta del Caribe *Panulirus argus* (Crustacea: Decapoda). Iberus; Revista de la Sociedad Española de Malacologia, 9(1-2): 127-139, 7 figs.

**Fischer, P.-H.** 1962. L'opercule de certains gastropodes considéré comme organe de combat. Jour. Conchyliol., 102: 44-46.

**Gonor, J. J.** 1966. Escape responses of North Borneo strombid gastropods elicited by the predatory prosobranchs *Aulica vespertilio* Linné and *Conus marmoreus* Linné. The Veliger, 8(4): 226-230.

**Iversen, E. S., Jory, D.E. & Bannerot, S. P.** 1986. Predation on queen conchs, *Strombus gigas*, in the Bahamas. Bull. Mar. Sci., 39(1): 61-75, 2 figs.

**Kohn, A. J.** 1956. Piscivorous gastropods of the genus *Conus*. Proc. Natl. Acad. Sci., 42: 168-171.

**Little, C.** 1965. Notes on the anatomy of the queen conch (*Strombus gigas* Linn.). Bull. Mar. Sci., 15(2): 338-358, 12 figs.

**Parker, G. H.** 1922. The leaping of the stromb (*Strombus gigas* Linn.). Jour. Exper. Zool., 36: 205-209, 2 figs.

**Prince, J. H.** 1968. The spider shell's [*Lambis*] eye. Sea Frontiers, 14(2): 100-105, 6 un-numbered figs. (not front cover.)

**Randall, J. E.** 1964b. Contributions to the biology of the queen conch, *Strombus gigas*. Bull. Mar. Sci. Gulf Caribb., 14(2): 246-295, 13 figs.

**Reed, S. E.** 1994. Masculinized females in the genus *Strombus*: aspects of their biology and possible advantages for mariculture of conch. See **Appeldoorn, R. S. & Rodríguez, B.** (eds.), pp. 213-221, 1 fig.

**Robertson, R.** 1959. Observations on the spawn and veligers of conchs (*Strombus*) in the Bahamas. Proc. Malac. Soc. London, 33(4): 164-171, 2 figs., pl. 11. — 1961. The feeding of *Strombus* and related herbivorous marine gastropods: with a review and field observations. Notulae Naturae (Acad. Nat. Sci. Phila.), no. 343: 1-9, 1 fig.

**Savazzi, E.** 1989. New observations on burrowing in strombid gastropods. Stuttgarter Beitr. Naturk., ser. A (Biol.), no. 434: 1-10, 5 figs.

**Stoner, A. W.** 1997. The status of queen conch, *Strombus gigas*, research in the Caribbean. Mar. Fish. Rev., 59(3): 14-22, 3 figs. — 2003. What constitutes essential nursery habitat for a marine species? A case study of habitat form and function for queen conch. Mar. Ecol. Prog. Ser., 257: 275-289, 7 figs.

**Stoner, A. W. & Ray-Culp, M.** 2000. Evidence for Allee effects in an over-harvested marine gastropod: density-dependent mating and egg production. Mar. Ecol. Prog. Ser., 202: 297-302.

**Vermeij, G. J.** 1993. A Natural History of Shells. Princeton University Press, Princeton, New Jersey. viii + 207 pp., 22 pls. (color).

**Yonge, C. M.** 1932a. Notes on feeding and digestion in *Pterocera* [=*Lambis*] and *Vermetus*, with a discussion on the occurrence of the crystalline style in the Gastropoda. Brit. Mus. (Nat. Hist.) Great Barrier Reef Exped. Sci. Repts., 1(10): 259-281, 6 figs. — 1932b. On the size attained by the crystalline style in *Tridacna* and *Strombus*. Proc. Malac. Soc. London, 20(1): 44-45.

# Shell Collecting in Iceland Part V: The Deep Sea

**Moshe Erlendur Okon**

[illustrated species in **bold** print]

The deep sea has always intrigued shell collectors, mainly due to its mysterious and inaccessible nature. By deep we mean from 50 meters down to over 3000 meters (160 fathoms). In the past, the only way to obtain conchological material from these depths was to open the bellies of fish that had swallowed molluscs dwelling on the ocean floor. During recent decades improved dredging techniques have been developed and there are now deep-sea trawlers capable of bringing up marine life from the sea bottom as deep as several kilometers.

Icelandic fishing boats operate all around the island and far from the coast. The large boats spend several days at sea and are equipped with onboard freezing plants where the fish, crayfish or squid are processed before the boats return to shore. There are several methods of fishing in the deep sea apart from trawling the bottom, such as using multiple lines, different kinds of nets, etc.

Deep-sea specimens in my reference collection were obtained in several ways. One was receiving bucketfuls of haddock (*Melanogramus aeglefinus* [Linnaeus, 1758]) bellies from fishermen. I opened these bellies and carefully cleaned and sorted the contents. Other specimens were obtained by trawlers that scrape the sea bottom and bring up whatever lies in the path of the trawling device. These are often the larger species, too big to be swallowed by most fish. Finally, colleagues assisted by giving me duplicates from their collection assembled over many years.

It should be noted that most of the deep sea species have a very wide depth range and can be found several meters or several hundred meters deep, depending upon other conditions such as substrate, currents, etc. I would like to thank Koen Fraussen from Belgium and Jon Bogason from Iceland for help with identification and taxonomy.

Of the deep-sea gastropods in the North Atlantic, the Buccinidae are probably best known. From the waters around Iceland are:
***Beringius ossiania*** (Friele, 1879) (Fig. 1), considered by some as a synonym of *B. turtoni* (Bean, 1834);
***Buccinum finmarkianum*** Verkruzen, 1875 (Fig. 2), a variable species;
***Buccinum hydrophanum*** Hancock, 1846 (Fig. 3);
***Colus gracilis*** (da Costa, 1778) (Fig. 4), a variable species for which several forms have been named, some of which may be valid species in their own right;
***Colus turgidulus*** (Jeffreys in Friele, 1877) (Fig. 5);
***Troschelia berniciensis*** (King, 1846) (Fig. 6), placed by some in Fasciolariidae;
***Turrisipho fenestratus*** (Turton, 1834) (Fig. 7), of which *Buccinum fusiforme* described by Broderip in 1830 is a senior synonym that cannot be used since it is preoccupied by a fossil shell described by Borson in 1822;
***Turrisipho lachesis*** (Mörch, 1869) (Fig. 8);
***Turrisipho moebii*** (Dunker & Metzger, 1874) (Fig. 9).

Other deep sea gastropods collected around Iceland include:
***Admete viridula*** (Fabricius, 1780) (Fig. 10), placed in Cancellarioidea, a small, white, umbilicate, circumpolar species, that is quite variable and has several synonyms and forms (*A. undatocostata* Verkruzen, 1875; *A. elongata* Leche, 1878; *A. contabulata* Friele, 1879: etc.);
***Euspira pulchella*** (Risso, 1826) (Fig. 11), a small naticid patterned with lines and dots;
***Margarites costalis*** (Gould, 1841) (Fig. 12), placed in Trochoidea, this small shell can be found in shallow to deep waters (*M. cinereus* (Couthouy, 1838) is a synonym still used by some for this species);
***Marsenina glabra*** (Couthouy, 1838) (Fig. 13), a small circumpolar lamellariid;
***Oenopota pyramidalis*** (Ström, 1788) (Fig. 14), a small elongated shell placed in the superfamily Conoidea has been found at depths greater than 2000 meters;
***Polinices montagui*** (Forbes, 1838) (Fig. 15), another small naticid with uniform colour;
***Scaphander lignarius*** (L., 1758) (Fig. 16), an interesting carnivore, preyed upon in turn by haddock;
***Volutomitra groenlandica*** (Beck in Möller, 1842) (Fig. 17), a small brown shell with three columellar folds, found around the North Atlantic and placed in Muricoidea (*V. alaskana* found in the Pacific seems to be a larger, separate species).

Among the deep-sea bivalves, Pectinidae are well known and popular among collectors. In the deep sea surrounding Iceland are:
***Cyclopecten imbrifer*** (Loven, 1846) (Fig. 18), an inequivalve with the right valve being smaller and resting inside the left valve;
***Delectopecten vitreus*** (Gmelin, 1791) (Fig. 19), a small translucent fragile shell;
***Palliolum tigerinum*** (Möller, 1776) (Fig. 20), a small but strong pectinid that is variable in color, pattern and smoothness (form *P. laevis* (Pennant, 1777) has no ribbing);
***Pseudamussium peslutrae*** (L., 1771) (Fig. 21), a medium pectinid with several wider radial ribs or folds, the right valve is white while the left is pink to brown. Several forms have been named by Locard (a French malacologist, 1841-1904) and some authors refer to this species as *P. septemradiatum* (Möller, 1776);
***Pseudamussium sulcatum*** (Möller, 1776) (Fig. 22), a small, pale, distinctly ribbed species also common in the Mediterranean (synonyms often used are *P. arata* Gmelin and *P. bruei* Payraudeau);
***Similipecten greenlandicus*** (Sowerby II, 1842) (Fig. 23), a small and very delicate transparent species.

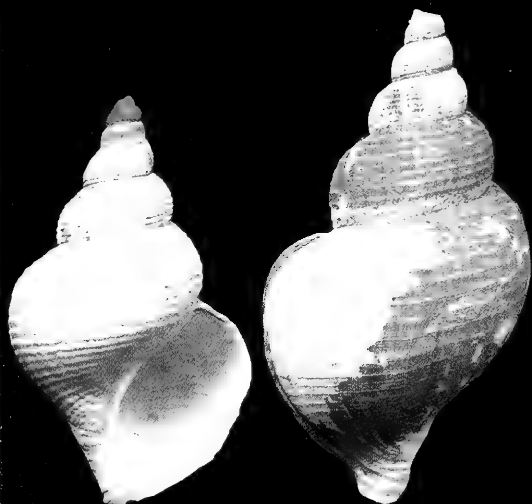

**Fig. 1.** ***B. ossiania*** **105mm, Iceland**

**Fig. 2** ***B. finmakianum*** **54mm, Iceland**

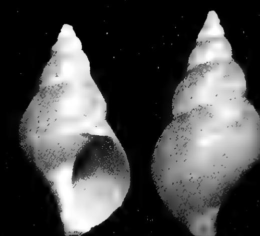

**Fig. 3.** ***B. hydrophanum*** **50mm, Iceland**

**Fig. 4.** ***C. gracilis*** **form** ***glaber*** **57mm, haddock stomachs, S. Iceland**

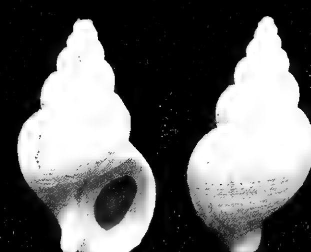

**Fig. 7.** ***T. fenestratus*** **40mm, Iceland**

**Fig. 8.** ***T. lachesis*** **45mm, Iceland**

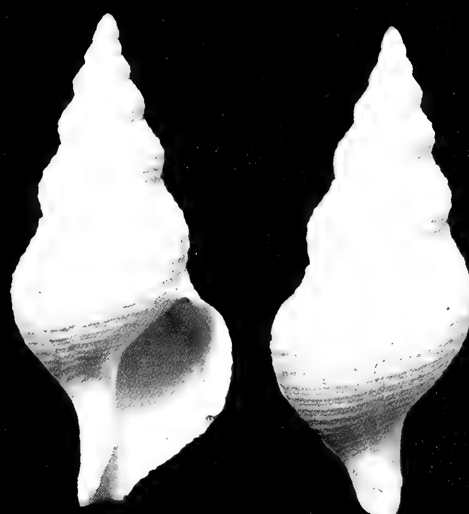

**Fig. 6.** ***T. berniciensis*** **94mm, S. Iceland**

**ig. 5.** ***C. turgidulus*** **75mm, Iceland**

**Fig. 9.** ***T. moebii*** **72, Iceland**

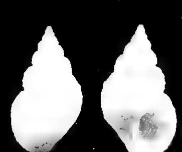

**Fig. 10.** ***A. viridula*** **16mm, 150m, S.W. Iceland**

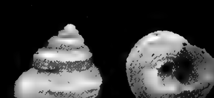

**Fig. 12.** ***M. costalis*** **11mm, S.E. Greenland**

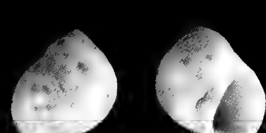

**Fig. 11.** ***E. pulchella*** **13mm, haddock stomach, W. Iceland**

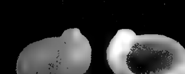

**Fig. 13.** ***M. glabra*** **11mm, haddock stomachs, N. Iceland**

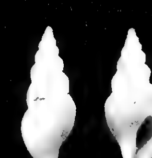

**Fig. 14.** ***O. pyramidalis*** **15mm, haddock stomachs W. Iceland**

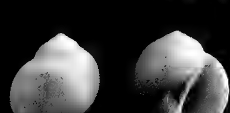

**Fig. 15.** ***P. montagui*** **11mm, 200m, S. Iceland**

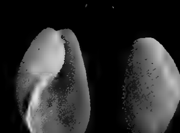

**Fig. 16.** ***S. lignarius*** **17mm, 200m, S. Iceland**

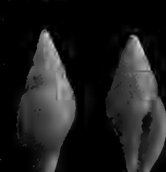

**Fig. 17.** ***V. groenlandica*** **21mm, 150m, S.W. Iceland**

Fig. 18. *C. imbrifer*
21mm, 500m, N. Iceland

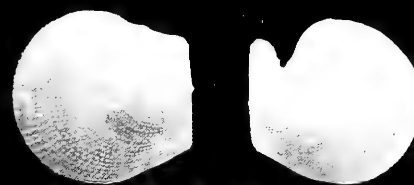

Fig. 19. *D. vitreus* 12mm,
150m, N.W. Iceland

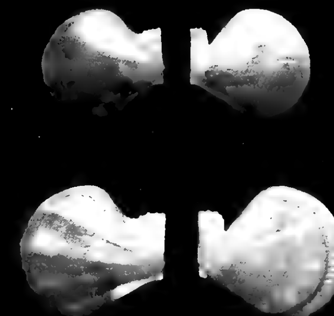

Fig. 20. *P. tigerinum* 15mm
& form *laevis* 12mm, 200m, S. Iceland

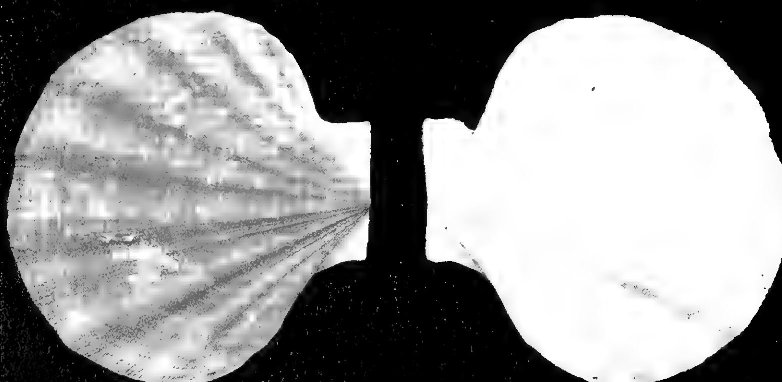

Fig. 21. *P. peslutrae* 49mm, Iceland

Fig. 22. *P. sulcatum* 24mm, Iceland

Fig. 24. *A. nodulosa*
14mm, Iceland

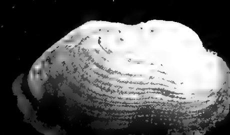

Fig. 25. *B. glacialis*
16mm, Iceland

Fig. 23. *S. greenlandicus*
15mm, N. Iceland

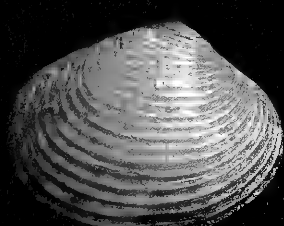

Fig. 26. *A. crenata*
30mm, Iceland

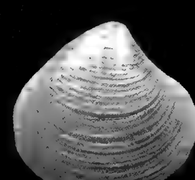

Fig. 27. *A. montagui*
15mm, Iceland

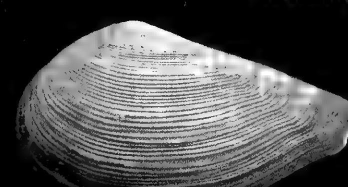

Fig. 28. *N. minuta*
20mm, 245m E. Iceland

Fig. 29. *N. pernula*
18mm, 245m E. Iceland

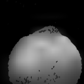

Fig. 30. *P. minimum*
5mm, haddock stomach,
S. Iceland

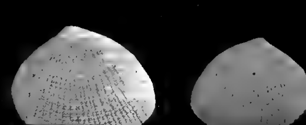

Fig. 31. *T. ovata*
15mm, 210m, S.W. Iceland

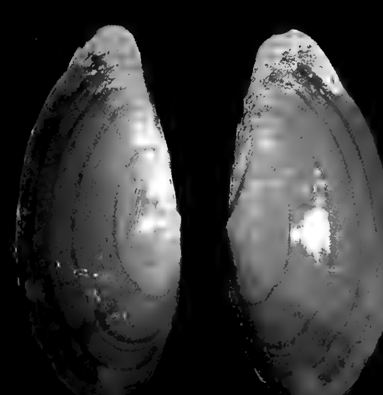

Fig. 32. *Y. hyperborea* 51mm, W. Iceland

Fig. 33. *Y. lucida*
7mm, 150, Iceland

Other deep sea bivalves include:
***Asperarca nodulosa*** (Möller, 1776) (Fig. 24), an arcid species living as far south as Angola;
***Bathyarca glacialis*** (Gray, 1824) (Fig. 25), limited to the Northern Boreal and Arctic region;
***Astarte crenata*** (Gray, 1824) (Fig. 26);
***Astarte montagui*** (Dillwyn, 1817) (Fig. 27);
***Nuculana minuta*** (Möller, 1776) (fig. 28) and ***N. pernula*** (Möller, 1771) (Fig. 29), sympatric species which differ in the shape of the posterior end, the latter being more elongated;
***Parvicardium minimum*** (Philippi, 1836) (Fig. 30), a small white cardiid;
***Timoclea ovata*** (Pennant, 1777) (Fig. 31), a common North Atlantic venerid, variable in color;
***Yoldia hyperborea*** Torell, 1859 (Fig. 32), a shiny green shell varying in width-length ratio (the elongated variation named by Ockelmann as *Y. limatuloides* is actually a synonym of *Y. amygdala*);
***Yoldiella lucida*** (Loven, 1846) (Fig. 33), a small shell with a greenish periostracum.

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**References:**

**Golikov, A.N.** 1995. Shell-bearing gastropods of the Arctic, Colus, Moscow
**Madsen, F. Jensenius.** 1949. The Zoology of Iceland Volume IV part 63: Marine Bivalvia, Copenhagen and Reykjavik
**Matsukama, Akihiko; Okutani, Takashi; & Habe, Tadashige.** 1991. World Seashells of Rarity and Beauty, National Science Museum Tokyo
**Oskarsson, I.** 1982. Skeld y rafana Islands, Reykjavik, Prentsmidjan Leiftur
**Poppe, G.T. & Goto Y.** 1991. European Seashells. Vol. 1. Wiesbaden
**Poppe, G.T. & Goto Y.** 1993. European Seashells. Vol. 2. Wiesbaden
**Rombouts, A.** 1991. Guidebook to Pecten Shells – Recent Pectinidae and Propeamussiidae of the World, Oegsteest Universal Book Services / Dr W. Backhuys
**Thorson, G.** 1941. The Zoology of Iceland Volume IV part 60: Marine Gastropoda Prosobranchiata, Copenhagen and Reykjavik

## IT'S THE CLOSEST THING TO BEING THERE

*A Review of **Undersea Treasures** Written, Photographed and Produced by Jim Miller*


*Undersea Treasures,* a new DVD produced by sheller and photographer Jim Miller, will enable you to experience a veritable panorama of shell trips and shell-related tropical scenes from the Southeast United States and the Bahamas by traveling no further than your computer screen. Here you will find authentic shelling experiences, not slick and trite scenes of large cruise ships and Indo-Pacific shells masquerading as specimens actually found.

After you have viewed the opener featuring Jim's famous *Cassis* photographs, you can choose a specific topic from a handy menu. Most episodes are shell-related and show a variety of collecting spots and methods. You can sit next to the window of the plane flying to the Abacos, or wade along a muddy creek bottom as Jim zeroes in on *Melongena corona sprucecreekensis.* You'll shiver with him as he seeks shells on the chilly beaches of Cumberland Island, Georgia, and St. Marks Bay, Florida, during a super low winter tide. You can gaze directly into underwater scallops' rows of baby blues, or if you want go to deeper, you get to see the eerie darks and creatures of the Bahamian Gingerbreads or move along underwater with an undulating tropical eagle ray. To relax, select the Eleuthera option and just sit back and gaze at the spectacular shores.

As the camera points to a distant perturbation in the sand expanse or to a dark shadow in the shallows and grasses, and moves in, you actually feel that familiar shell collector's stomach-tightening curiosity. What could be there? Just as you can bear the suspense no longer, a hand reaches out, retrieves the mystery item, brushes it off and gives you a close look at the uncovered treasure, usually a beautiful live shell. The aural accompaniment further contributes to the authenticity of the *Undersea Treasures* visual experience. Many episodes include an array of the "glub-glub" sounds you would hear if you were there. Some episodes feature appropriately selected classical music; others are narrated.

Miss something the first time around? You are free to go back for a fresh look. Nothing will have been carried away by the tide. No messy shells to tote home and clean. Enjoy spending time with this engaging DVD. It's the closest thing to being there!

Karen VanderVen
kvander+@pitt.edu

COA members can buy *Undersea Treasures* for \$24.99 plus \$3.50 for shipping (\$5.50 for overseas orders). For more information: http://www.jaxshells.org/dvd.htm or:

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# Babyloniinae: The Babylon Shells

**Thomas E. Eichhorst**

Babylon shells, named for a resemblance to the Tower of Babel (also called ivory shells), are present in just about every shell collection, from the small box of assorted shells a child buys at the beach to institutional collections. After having said that, it must also be noted that it is a rare collection that contains over a dozen species of this group. While some of the Babylon species are ubiquitous and in every collection, others in this group are in fact quite rare. *Babylonia angusta* is known from only three specimens. There are also unresolved issues of taxonomy.

Most popular shell books consider these snails as a single genus, *Babylonia* Schlüter, 1838, in the family Buccinidae Rafinesque, 1815. More specialized writings, however, have taken issue with this, splitting the genus *Babylonia* into the sister-genera *Babylonia* and *Zemiropsis* Thiele, 1929, while the group as a whole has been elevated to the subfamily level (Babyloniinae Kuroda, Habe, & Oyanna, 1971) and even to the family level (Babylonidae Goryachev, 1987). Perhaps the two best references for Babylon shells are: Altena & Gittenberger (1981) and Gittenberger & Goud (2003). The earlier work is a complete listing and description of Recent and fossil *Babylonia* and *Zemiropsis* species known at the time, while the second work expands on this as well as clarifying some issues. The taxonomy, classification, identification, and natural history presented here are taken from these two seminal works. These authors concur with splitting the genera and with the subfamily status of Babyloniinae within Buccinidae.

*Babylonia* occurs from Japan to the Red Sea while *Zemiropsis* occurs from South Africa to Mozambique. The distributional gap between these two is spanned by fossil species. The earliest known fossil forms are from the Eocene in Europe, but they disappeared from that area prior to the Pliocene. In the Indo-Pacific they are known from the Miocene and several fossil species can be traced directly to extant species.

The snails are carnivorous and are found from shallow waters to 100 meters or more. They seem to prefer a mud substrate and are routinely caught in traps with pieces of fish as bait. They are commonly eaten in Asia, but there is a toxin that can be present in the snail's gut that is highly poisonous to man. This toxin is not always present and breaks down quickly when heated, as during cooking preparations. Nonetheless, at least *Babylonia japonica* has been implicated in several deaths.

The shell is of buccinoid shape and covered by a thin yellow to brown periostracum. It is dextrally coiled (one known sinistral specimen of *Babylonia japonica*). The shell surface is smooth with the exception of almost microscopic growth lines and on most species very faint spiral grooves. With the periostracum removed the shell is glossy white with tan to brown markings. In the genus *Babylonia*, the lowest point of the final whorl or outer lip (with the spire held upwards) and the base of the columella are about equal. In *Zemiropsis*, the lowest part of the final whorl extends beyond the columella. The operculum is a corneous structure with evident growth lines and an eccentric nucleus. Occasionally a specimen will have a concentric operculum, usually caused by earlier physical damage. The umbilicus may be either open or closed (sometimes varying within a single species).

The radula is a rachiglossate radula, coded as 1+R+1, resulting in a simple structure of about 40 rows of teeth with three sharply pointed teeth per row. The radula is designed for tearing and ripping.

**1+R+1**

Reproduction is sexual, but there has not been any sexual dimorphism noted in the shell. Eggs are laid in egg capsules with some 27-50 eggs per egg capsule and some 10-60 egg capsules laid at any one time. Sexual maturity is reached in two to three years and the snails live for more than five years.

There are 15 known extant species of *Babylonia* (13 displayed here, plus 1 subspecies), 13 fossil and extinct species, and 4 extant species in *Zemiropsis* (1 displayed here) with no known fossil species. None are known from the New World.

I owe special thanks to William J. Ritter of Oregon who first informed me of the references used here and later provided both volumes.

**Species List** (illustrated listed in **bold**)

***Babylonia ambulacrum* (G.B. Sowerby I, 1825), Philippines to the Andaman Islands**
*Babylonia angustata* Altena & Gittenberger, 1981 China
***Babylonia areolata* (Link, 1807), Taiwan to Sri Lanka**
***Babylonia borneensis* (G.B. Sowerby III, 1864), Borneo**
***Babylonia feicheni* Shikama, 1973, Vietnam**
***Babylonia formosae* (G.B. Sowerby II, 1866), Taiwan**
***Babylonia habei* Altena & Gittenberger, 1981, Taiwan**
***Babylonia japonica* (Reeve, 1842), Japan to Taiwan & Korea to China**
***Babylonia kirana* Habe, 1965, Japan to the Marianas**
***Babylonia lani* Gittenberger & Goud, 2003, Thailand**
*Babylonia leonis* Altena & Gittenberger, 1981, Sumatra
***Babylonia lutosa* (Lamarck, 1822), Taiwan to Singapore**
***Babylonia perforata* (G.B. Sowerby II, 1870), Taiwan**
***Babylonis spirata spirata* (Linnaeus, 1758), Java - Persian Gulf**
***Babylonia spirata valentiana* (Swainson, 1822), Red Sea to India**
*Babylonia umbilifusca* Gittenberger & Goud, 2003, Oman
***Babylonia zeylanica* (Brugière, 1789), E. India to Sri Lanka**
***Zemiropsis papillaris* (G.B. Sowerby I, 1825), South Africa**
*Zemiropsis pintado* (Kilburn, 1971), Natal to Mozambique
*Zemiropsis pulchrelineata* (Kilburn, 1973), South Africa
*Zemiropsis rosadoi* (Bozzetti, 1998), Mozambique

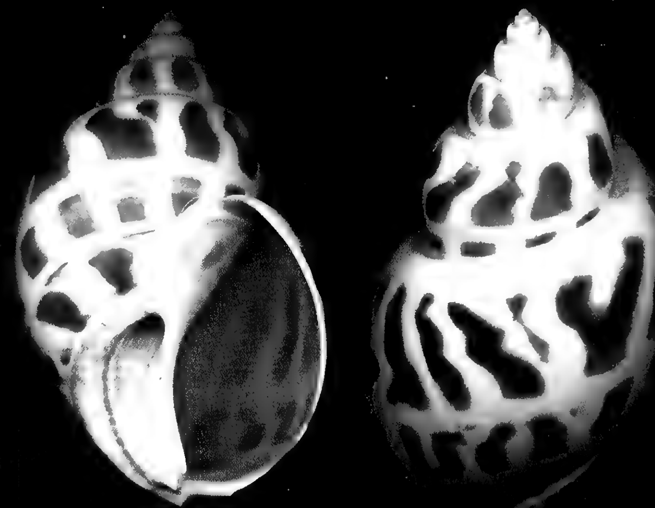
**References:**

**Altena, C.O. Van Regteren & Gittenberger, E.** 1981. The genus *Babylonia* (Prosobranchia, Buccinidae), Zoologische Verhandelingen, No. 188, 15 July 1981, 57 pp., 19 figs., 11 b&w plates.

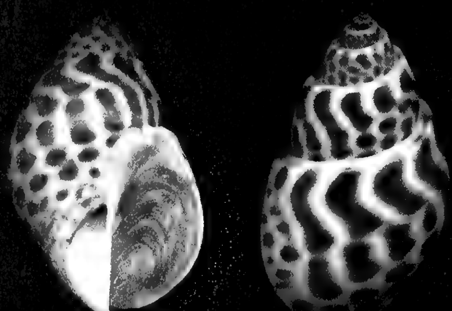
**Gittenberg, E. & Goud, J.** 2003. The genus *Babylonia* revisited (Mollusca: Gastropoda: Buccinidae), Zoologische Verhandelingen, pp. 151-162, 24 figs. on 3 color plates.

# BABYLONIINAE

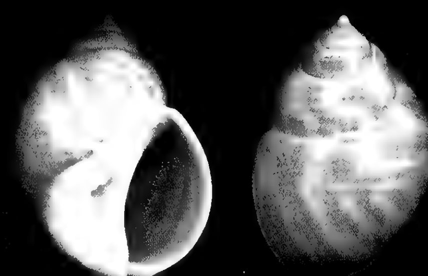
*Babylonia ambulacrum* (G.B. Sowerby I, 1825) 44mm, Philippines to Andaman Islands



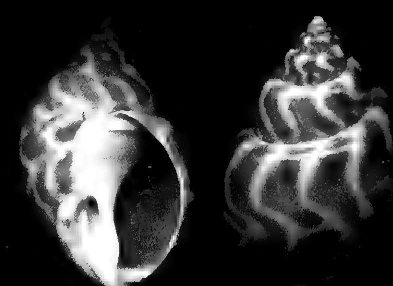
*Babylonia areolata* (Link, 1807) 74mm, Taiwan to Sri Lanka



*Babylonia borneensis* (G.B. Sowerby III, 1864) 46mm, Borneo



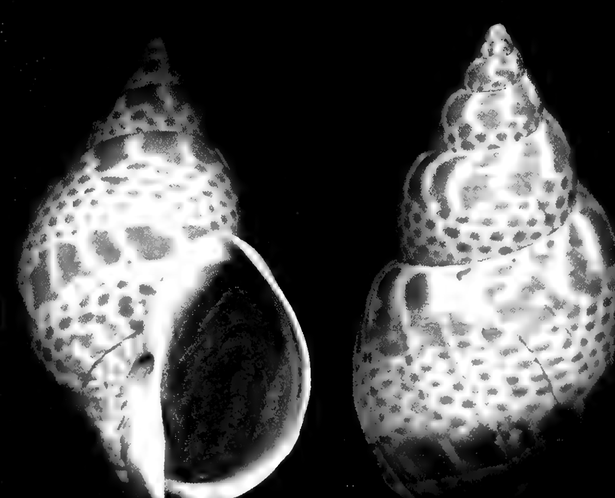
*Babylonia feicheni* Shikama, 1973 40mm, Vietnam



*Babylonia formosae* (G.B. Sowerby II, 1866) 41mm, Taiwan

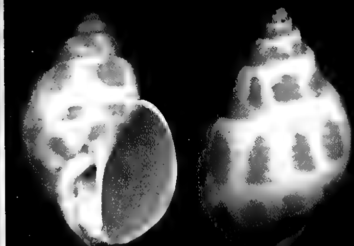
*Babylonia habei* Altena & Gittenberg, 1981 47mm, Taiwan

*Babylonia kirana* Habe, 1965 38mm, Japan to the Marianas



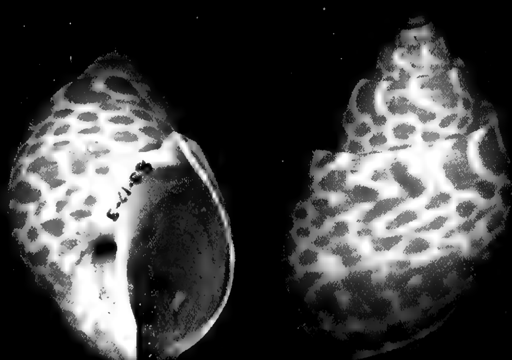
*Babylonia japonica* (Reeve, 1842) 71mm, Japan & Korea to Chi

*Babylonia lutosa*
(Lamarck, 1822)
33mm, Taiwan to
Singapore



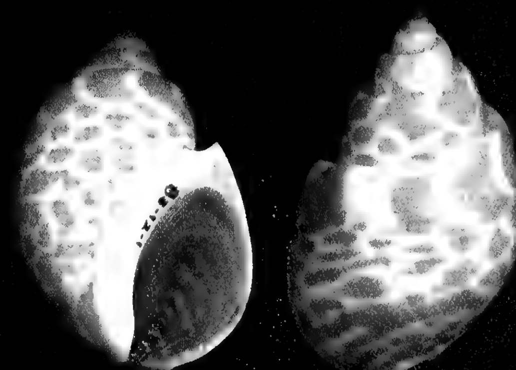
*Babylonia lani*
Gittenberger & Goud, 2003
32mm, Thailand

*Babylonia perforata* (G.B. Sowerby II, 1870)
78mm, Taiwan

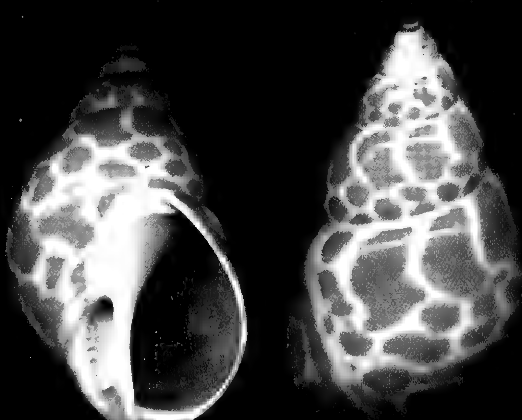


*Babylonia spirata spirata*
(Linnaeus, 1758) 53mm,
Java to the Persian Gulf

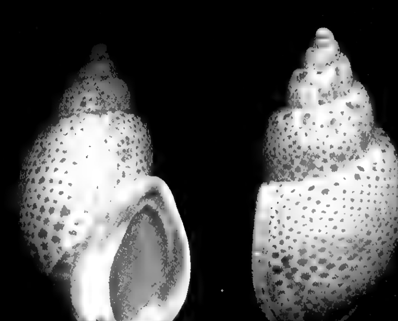
*Babylonia spirata* (color form)
35mm, India



*Babylonia spirata valentiana*
(Swainson, 1822) 48mm,
Red Sea to India



*Babylonia zeylanica* (Bruguière, 1789)
57mm, India to Sri Lanka



*Zemiropsis papillaris* (G.B. Sowerby I, 1825)
41mm, South Africa to the Transkei

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# Neptunea Awards

There were many nominees for this year's Neptunea Awards. Thank you to each and everyone who submitted a nomination. A maximum of three awards can be given out in any one year, and this year we had three winners who seemed to stand out among the many worthy nominations.

**No picture, sorry.**

**Richard (Dick) Forbush of Venice, Florida.** Dick has been a COA member since 1977 and served as both COA Secretary and President. He assisted greatly in the early days of the Clearwater Jamboree and was President of the Cleveland Shell club and active in the Sarasota Shell Club. Dick has presented a number of interesting talks at national and local conventions and organized a great many shell shows. Dick was unavailable the evening of the awards ceremony.

**COA President Hank Chaney presents the 2005 Neptunea Award to Anne Joffe during the annual COA convention banquet.**

**Anne Joffe of Sanibel, Florida.** Anne has been a member of COA since 1974, and served as both COA Vice President and President. She chaired at least three conventions for COA, including this year's very successful Sanibel convention. She served as President of the Sanibel Shell Club for many years and has done any number of jobs in support of local shell clubs, the Conchologists of America and the American Malacological Society and as an active fundraiser for the Bailey-Matthews Shell Museum.

**COA President Hank Chaney presents the 2005 Neptunea Award to Bill Lyons during the annual COA convention banquet.**

**William (Bill) Lyons of St. Petersburg, Florida.** Bill has a long history of supporting shell clubs and shell club members in many capacities. He has judged over 100 shell shows, most often paying his own way. He has given a number of presentations to both local clubs and at COA conventions. He served as President of the AMS in 1987 and is known for generously providing helpful conchological advice to any who ask. Bill was a professional malacologist for the State of Florida and authored several papers on Florida and Gulf fauna. He is now retired and working on the Fasciolariidae.

There is much more that can be written about each of these winners, but this will at least give you an idea of some of their accomplishments. All of the nominations were submitted to the board of directors who voted by secret ballot. This December there will be another nomination form in your American Conchologist magazine. If you would like to nominate someone for this award, please do so. Nominations should be sent to me via regular mail or personal e-mail.

Thank you to all of the nominees and the winners for your hard work and support of COA and conchological organizations of the world.

Carole Marshall
Marshalldg@aol.com

# The COA Award

**Carole P. Marshall**

The COA award is presented at a shell show for the exhibit that best exemplifies what an amateur exhibitor can do. In other words, if almost anyone puts in the time and effort, no matter their experience level, they could win this award. The exhibit does not need to contain rare or expensive shells, it just needs to be well put together, contain accurate information, and be pleasing to the eyes. I asked a couple of different people who have won this award what work was done for their exhibits.

Gene Everson, who has probably won this award more than anyone else in the world, said he usually starts his exhibits a year in advance of the shell show season and typically puts together two exhibits per year. Sometimes, as in one of this year's exhibits titled "Beautiful Shells," it was a surprise when he won, as this was his third exhibit of the year and was an exhibit he quickly put together just to show the beauty of certain shells.

A lot of research goes into each exhibit. If an exhibitor is doing one family, there may be several years of working on one exhibit to obtain as many members of that family as possible. The extensive research and the complete (as possible) collection are then combined into a presentation with proper labels (scientific names spelled correctly) and a well-crafted display (cases, printed materials, and shells).

The nice thing about a COA award is it can be won without thousand dollar shells. Carolyn Petriken won with an exhibit of the differences between opercula. I have won the award with a group of *Argopectens*, a commercially fished, common group of scallops. Thank you to COA for providing this award and a special thank you to all of those who have exhibited in shell shows.

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**No image available.**

__Belgium International Shell Show,__ Antwerp, Belgium, May 2004. The winner was Bart van Heugten with an exhibit of Antarctic Mollusks. The judges were A.Delsaerdt, W. Backhuys, W. Faber, A. Verhecken, P. Bail and L. Broekmans.

__Oregon Conchologists Society Shell Show,__ Oregon, June 2004. The winner was Judy Barrick (shown above with the COA Award) with an exhibit entitled "Vacated Homes of a Few of the World's Colorful (and not) Landsnails." Judges were Dr. Walter Sunderland and Ray Wilson. Judy's display contained 37 land snails with several color forms and some recently described species.

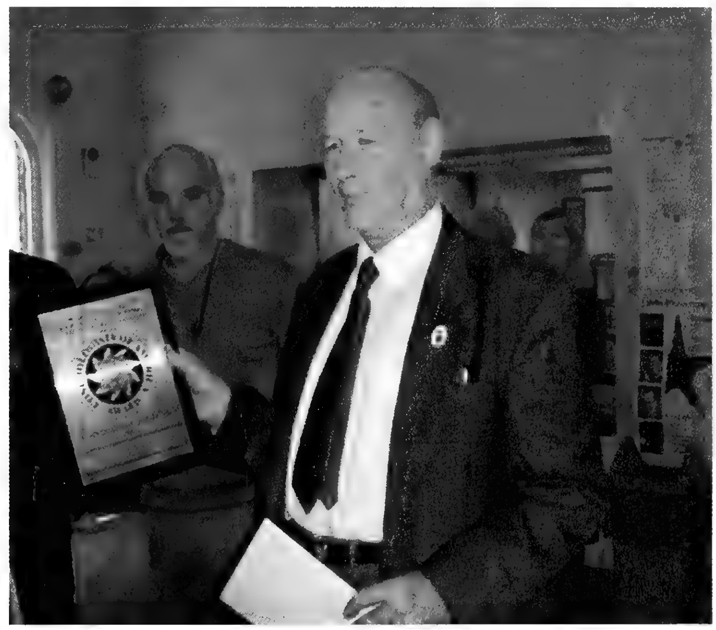
__The Keppel Bay Shell Club Shell Show,__ Australia, July 2004. The winner was Jonathan Mason (above center). He had an exhibit entitled simply "My Favorite Family." Jonathan's favorite family was Cypraeidae and he had an aquarium with live *Cypraea errones*, *Cypraea xanthodon* and *Cypraea macula*. The Keppel Bay Club had 12 judges including COA friend and dealer Merv Cooper. The trophy was presented to Jonathan by National Parliment Member, John Lever (right) and the citation was read by State Parliament Member, Paul Hoolihan (left).

The Jacksonville Shell Club, Jacksonville, Florida, July 2004. The winner was Charlotte Lloyd-Thorpe (shown with her COA Award). Her presentation was entitled "Pelecypods of the World." The judges were Bill Lyons and Wayne Harland. Charlotte had an impressive display of worldwide pelecypods (bivalves).

North Carolina Shell Show, North Carolina, September 2004. Vicky Wall (above center) won with an interesting exhibit called "Chitons - Coat of Mail Shells." Vicky's exhibit consisted of 18 feet of chitons containing 108 species. She included a great deal of information detailing collection techniques and taxonomy. Judges for that show were Linda (left) and Kevan (right) Sunderland.

**No image available.**

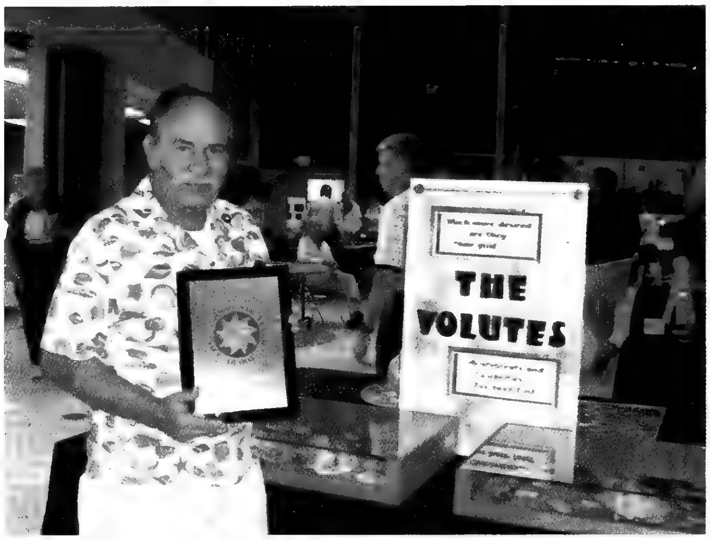
Philadelphia Shell Show, Pennsylvania, October 2004. The winners were Ed Shuller and Jeannette Tyser with a self-collected exhibit entitled "Mollusks of a North Carolina Barrier Island." According to the judges they had an extraordinary variety of shells for that area. The judges were Dr. Henry Chaney and Chris Takahashi. At the Philadelphia show there is also special award given for the most beautiful exhibit. The Len Hill Award is donated by Sue Hobbs and is an unusually beautiful glass sculpture. The winner of that award was Gene Everson for his exhibit of shells from Balayan Bay, Philippines.



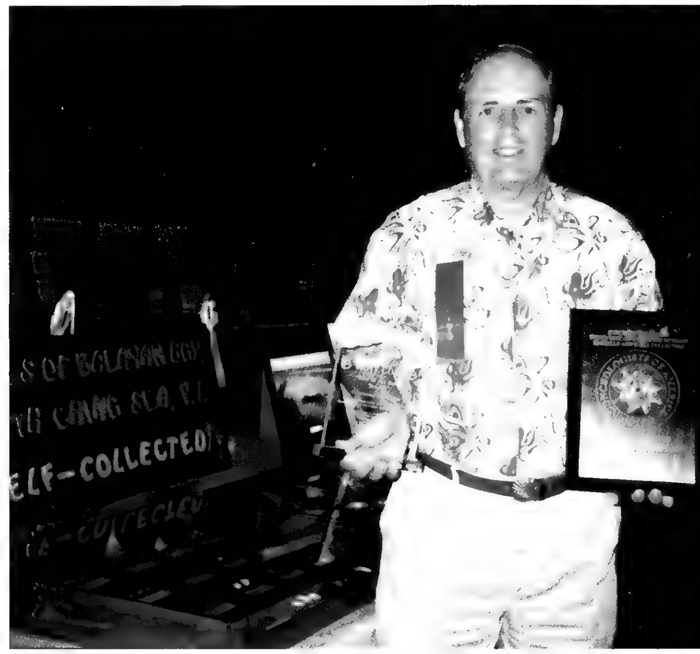
British Shell Collector's Club, Kent, England, October 2004. The winner was Michael Dixon (shown above with the COA Award) with an exhibit of Trochidae of Australia. The clever title was "They're the Tops Down Under." Michael followed Barry Wilson's *Illustrated Marine Shells* with his exhibit. Judges were Terry Wimbleton, Mick Davies and Paul Rosa.

**No image available.**

The Sea Shell Searchers of Brazoria Shell Show, Texas, November 2004. The winner was Patty Humbird with an exhibit entitled "Muricidae." Patty had 40 feet of Murex in 20 cases. Her exhibit included a great deal of information on the taxonomy and characteristics of the family. The judges were Dave Green and Chris Takahashi.



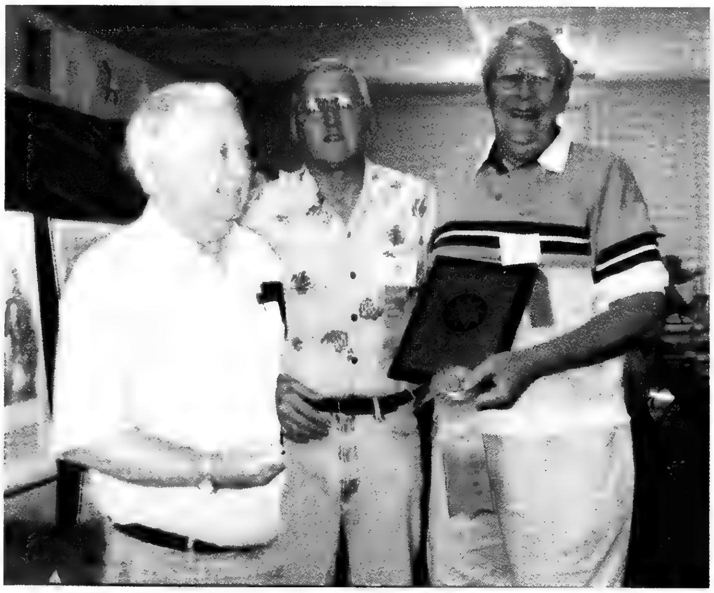

**The Astronaut Shell Club Shell Show**, Florida, 2005. The winner was Jim Cordy (shown above with the COA Award). His exhibit was entitled "The Volutes," long a special interest of Jim's. He had 64 feet with 25 cases of worldwide volutes. The judges were Bob Lipe and Bill Lyons.



**The Sarasota Shell Show,** Florida, February 2005. Gene Everson (shown above with his COA Award and his Mote Marine Trophy) won his second COA Award of the year with a display of "Shells of Balayan Bay and South China Sea." The judges were Emilio Garcia and Bob Lipe.

**The Broward Shell Show,** Florida, February 2005. The winner was Gene Everson (shown above with the COA Award). He won with an exhibit of Turbinellidae. In his exhibit he had SEM photos of the radular teeth and separated the family into 5 subfamilies. The judges were Harry Lee and Wayne Harland.

**St. Petersburg Shell Show**, Florida, February 2005. The winner was Carolyn Petriken (shown above) who won the COA award for an 11-foot exhibit called "What is an Operculum?" In it, Carolyn explained the different functions of opercula and displayed the many various types.



The Sanibel Shell Show, Florida, March 2005. The winners were Harry (above right) & Lillian Berryman (not shown). Their exhibit was titled "The Genus *Lambis*" and consisted of 8 cases, 18 feet in length. Shown was the complete family with a distribution map of each species as well as examples of growth, color forms, and freak shells. The judges were Dr. Harry Lee (center) and Bill Lyons (left).

The Treasure Coast Shell Club, Florida, March 2005. Gene Everson (above center) picked up his third COA award. His exhibit, "Beautiful Shells" was a surprise winner for Gene. He put it in as an afterthought to help out the club. Many of the shells were self-collected. The judges were Bill Lyons (right) and Bob Janowsky (left) of Mal de Mer Enterprises.

## Jordan Star's Web Picks

CARLOS CARVALHO SHELLS COLLECTION, http://www.shellscarvalho.com/. Nice site, seems to be a work in progress. Thumbnail pictures sharper than full size. Many pictures but some overlap in text. A shell ID section. Worth your time to visit.

MEDITERRANEAN SHELLS, http://www.conchigliedelmediterraneo.it/. Very nice site, pictures sharp, clean, and with detail. Lots and lots of shells on site, a help to Mediterranean shell ID. A site worthy of a visit.

SEASHELL-COLLECTOR, http://www.seashell-collector.com/index.htm. A nice shell site. Pictures to help identify shells. Online articles and you can post articles on the site. A breeze to navigate and not crowded with links.

TOP SEASHELLS LINKS TO SHELL WEBSITES, http://www.topseashells.com/links.php. Links to sites you might know and have visited, but there might be new ones here. A jumping off point for investigating shells, dealers, commercial sites, crafts, etc.

TOPIC PAGE, http://www.valdosta.edu/~kkkrickel/topic.html. A kid's page with lots of fun activities for kids. Has a link to the COA kids page.

INTERNATIONAL COUNCIL FOR ARCHAEOZOOLOGY (ICAZ), http://triton.anu.edu.au/. A scientific site and organization concerned with shells recovered from archaeological deposits (tools, food, or decoration). Has an interactive map of worldwide sites and the people working them as well as an on-line newsletter. An interesting organization and site.

Links good as of 8-25-2005

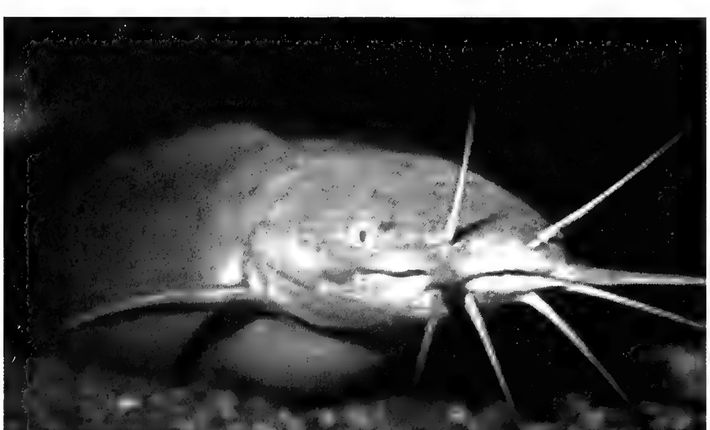
# NON-NATIVE NUISANCE SPECIES: THEY CAN REALLY RUIN YOUR HABITAT

**Hank Foglino**

In any habitat a favorable balance of factors is critical to each individual organism's success. This balance can be achieved by Divine intervention or by evolution, which takes a heck of a lot longer. Any introduced factor that causes an unbalance in the habitat will, in all probability, change the carrying capacity of the habitat and can possibly result in the extinction of one or more species. The study of this balance and of the relationships of organisms and their interactions within various habitats or communities is called ecology.

There are many examples of disruptions in the natural order by the introduction of a species, either faunal or floral, not native to the area. Introduced mice and rats threatened to overrun Australia, so

**Above: Sea lampreys (*Petromyzon marinus*) infesting a lake trout in Lake Superior. Photo USGS.**
**Below: Walking catfish (*Clarias batrachus*) remain restricted to central Florida southward with isolated findings in California and Arizona. Cold weather limits their range. Photo USGS.**



**The flowering rush (*Butomus umbellatus*) an invasive perennial introduced into the Midwest as an ornamental. Photo USGS.**

they imported cats. The rodent population may have declined somewhat, but the eventual result was the Australians were then up to their buttocks in cats. Today Australia has a problem with both introduced rodents and feral cats. Periwinkle snails were eaten and enjoyed in Europe, but when they were introduced to North America and offered on American menus, they were ignored. Have you ever seen how many periwinkles we have on some of our beaches and along inland lagoons? Lampreys appeared in the Great Lakes in the early 1900s. Of the 140 or so introduced fish in the Great Lakes, these are considered the most destructive. Lampreys are primitive parasitic eel-like fish with a suction cup type mouth lined with sharp teeth. They attach themselves to the sides of fish like sea trout and whitefish, rasp away the skin and suck out blood until the fish dies, then they look for another host. The flowering rush, a perennial plant from Europe and Asia, was introduced in the Midwest as an ornamental plant. The problem is it grows to the point where it crowds out native species of vegetation.

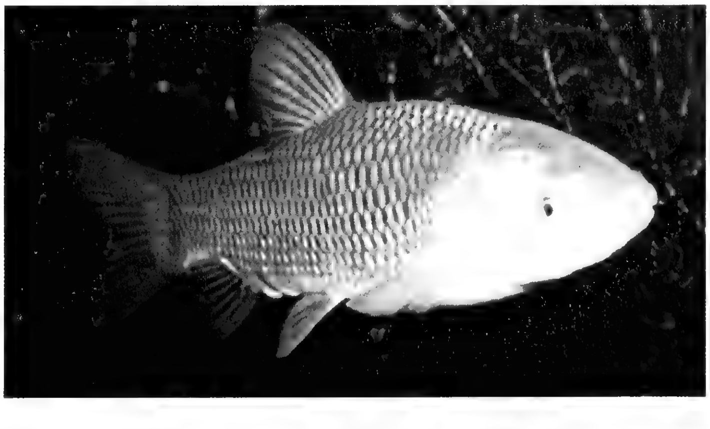
The source of exotic species that someone brings in is usually easily determined. The lamprey is native to coastal regions of both sides of the Atlantic Ocean. They found their way to the Great Lakes through the Weeland Canal, circa 1921. Another means of transportation is in the bilge water of incoming vessels. When

unloading, oceangoing vessels adjust their hydrodynamic characteristics by changing their centers of buoyancy. In the old days they used rocks, which when thrown overboard created few problems. Today vessels change the water level in their ballast tanks to adjust buoyancy. When this water is pumped on board it comes complete with the waterborne population of the area. This includes adults, juveniles, larvae, and eggs of whatever species happen to be pumped into the tanks along with the water. These organisms are transported to other ports and discharged into the environment. The zebra mussel has been in the news a great deal lately. These small bivalves migrated from their native Black and Caspian Seas to western Europe via man-made canals. They resided in the fresh waters of western and central Europe for almost twenty years before winding up in a ballast tank and coming to this country. The first sightings of this species in North America were in Lake St. Clair in June 1988. They quickly spread to Lake Erie, Lake Ontario, and the St. Lawrence River. Since then they've spread all over the Great Lakes and a growing number of US and Canadian canals and rivers. They are still spreading. How about other species? We can only speculate: aquarium fish dumped into water systems when they are no longer wanted, migrating species like the catfish that can come out of water for a short period and migrate from pond to pond?

**Zebra mussels (*Dreissena polymorpha* [Pallas, 1771]) are now widespread through the northeastern, midwestern, and southern U.S. They cost millions in damage to water works, power plants, pipes, and water craft, as well as pose a potential hazard to threatened native freshwater mussels. Photo USGS.**

Optimists may opine that there is no big deal and we just have more living things about us to study and enjoy. This is rarely the case. These exotic species arrive and don't belong here. As noted at the beginning of this article, many habitats have achieved a balance between predator and prey and the other living organisms in the community. Exotic species often upset this balance because they have no natural predator in this new habitat and grow to large numbers until eventually they dominate and use up available nutrients. Or they may be the predators, eating up all the native species. Large populations can also foul up human projects. The afore-mentioned zebra mussels are without predator in this country and they coat vessel bottoms decreasing the vessel's headway until copious amounts of gasoline are required to make any decent headway. They also clog intake ports at power plants restricting or stopping the water flow required to cool and condense the used steam back to liquid. The same applies to plants; exotic species may find their new environment delightful and grow to such great proportions that they cover the water surface preventing light penetration, resulting in decreased photosynthesis and a decrease in oxygen content, resulting in the death of a number of native species. It should be noted that in trying to eliminate plants, exotic species may be introduced to help alleviate the problem. As an example, Asian grass carp were introduced to eat up introduced water vegetation. These carp were supposedly sterile and thus unable to reproduce and invade the environment, but we now have four different species of Asian grass carp that have invaded our waterways. (See http://www.umesc.usgs.gov/invasive_species.html for more on invasive species in the U.S.)

How does this affect those of us who enjoy boating, fishing, and shell collecting in the nation's waterways? We don't cross the ocean. We don't have ballast tanks. Certainly there is a problem with invasive species, but surely nothing caused by individuals. Well, one aspect is the bait we use. If you catch your own bait where you fish, there is no problem. If you get your bait from the local bait shop, however, you have no idea where it came from. Rusty crayfish



**Grass carp (*Ctenopharyngodon idella*) were introduced to contol exotic vegetation and soon became a problem as they out-competed native fish for resources. Photo Florida Fish & Game.**

are native to streams in Ohio, Kentucky and Tennessee; but fishermen who used them for bait have broadened their range considerably. These crayfish can severely reduce lake and stream vegetation, depriving native fish and their predators of cover and food. So do be careful not to get rid of your unused bait overboard at the end of the day if it didn't come from the area.

If you trailer your boat, canoe, kayak, personal water craft, or any other platform that goes from one body of water to the another, before leaving the water access area:

- Remove plants and animals from your boat trailer and accessory equipment.
- Drain your live wells, bilge water and transom wells.
- Empty your bait bucket on land.
- Wash your boat down thoroughly. If possible, let it dry three days before going into another body of water.
- Learn what these invading organisms look like and report any findings to your local authorities.

Global environmental changes also cause displacement of native species. The meandering Gulf Stream brings up tropical species that find their way into our waters. The Shinnecock area of New York, among others, contains a host of exotic tropical fish. If Mother Nature has taken it upon herself to spread some exotic nuisance species our way, so be it, but how about we let her do it by herself and not get involved.

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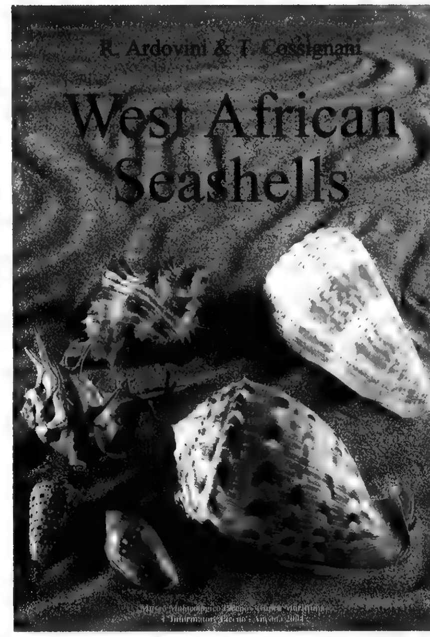
**In Memoriam:**

Ron Bender

# Book Review




I waited many years for an updated book on the seashells of West Africa. At last this book has become available (June 2005), although dated by the publishers a year earlier. The limited text is in Italian & English, consisting of only short descriptions of the families illustrated.

The book designates the borders of the west African malacological province as, "...from southern Morocco to the northern coast of Namibia." It is not clear if Namibia is included, because it further states, "...where the Western Cape Province of South Africa begins," which is in fact the southern border of Namibia. There is a short description of the coast of West Africa, as well as the Canary and Cape Verde Islands. The ocean currents and upwellings in the area are also mentioned.

There are two main sections of the book. The first is a systematic list of the shelled mollusks found in the region, comprising 2,738 species of chitons, gastropods, scaphopods, bivalves, and cephalopods (Argonautidae and Spirulidae). Not all malacologists will agree with the genera or families used in the book. The second section contains over 2,000 excellent colored photographs of most of the species mentioned in the list. Without negating the importance of the photographs shown, the question is what criteria were used in choosing them? The Marginellidae are listed with 82 species and the Cystiscidae with 59 species, altogether 141 species, but of 128 illustrations of these families only 76 species are shown. Likewise in the Conidae, 104 species are listed, but of 123 illustrations only 62 species are shown. Perhaps it would have been preferable to show additional species from the list?

My personal collection of shells, until recently, was mainly from the Mediterranean, Western Europe, western Atlantic, and Indo-Pacific. This list sheds light on the tropical eastern Atlantic, the shells of which are not as well known. Rechecking my collection I found over 400 species in my collection also found in this region.

My criticisms of the book are minor: some of the English is difficult to understand and could have been better translated, and the afore-mentioned lack of some images. Overall the authors are to be congratulated on the mammoth task they undertook (including an extensive list of bibliographical references). This book is of great value and highly recommended to all shell collectors and students of West African mollusks (320 pp., appr. $170).

**Zvi Orlin.**
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# COA Convention 2005 – A Return to the Islands

**Tom Eichhorst (photos by John Jacobs & Fay Mucha)**

This year's convention was in Punta Rassa, Florida, literally feet from the causeway to Sanibel Island. The convention was held at the Sanibel Harbour Resort and Spa, a superb facility that added to the convention experience. As in the past, I attended with my shelling buddy Bruce Neville. This not only saves on room costs, but his memory has yet to become fogged with age and he can actually remember shells in my collection better than I can.

We showed up a day before the actual convention and were quite disappointed when we found out we were not staying in the main hotel (with the convention rooms, restaurants, and most of the COA members) but were *stuck* in the smaller hotel (still part of the complex) about a block away. There was a shuttle that ran constantly between the two facilities and the walk was actually quite pleasant and took less than five minutes – but still we felt a bit put out. Our consternation was somewhat mollified when we found our room was quite large, well appointed, and had a great ocean view. Then we discovered that because this smaller hotel did not have a restaurant, they provided their guests with free breakfast, high tea, and an evening happy hour (actually two hours) with free drinks and heavy hors d'oeuvres. The group *stuck* in the smaller facility was a smug bunch as we walked to the convention meetings after our free breakfast or walked back in the evening in time for drinks, canapés, and tasty creations involving fresh grouper. That week will be tough to top!

The actual convention pretty well matched our room experience; it was consistently well run and organized, and each event seemed to have a special touch or two that made the experience more enjoyable. Thanks and congratulations are certainly due to Anne Joffe and her hard-working and dedicated team of volunteers who made all of this possible. The field trips were varied and enjoyable; the welcome party was a full sit-down dinner; the silent auctions were smoothly run; the oral auction included hors d'oeuvres, a cash bar, and the humor of the auctioneering team of Hank Chaney and Paul Callomon; and the convention programs set up by Harry Lee were thematically arranged, consistently first-rate, and ran on time. There were two judged contests, a "best shell" from a given area (with some very rare shells on display) and a favorite mermaid contest. Both had a wide range of superb entries and were well received. There were some 48 dealers at the bourse and each dealer and collector I talked to agreed it was a successful event. Everyone had a great time and we raised a lot of money for our continued grant program for molluscan research. The convention ended with the same class that typified previous days. We had a swiftly served and quite tasty dinner with a humorous presentation provided by Alice Monroe to settle our meal.

The images on the following pages give only a limited impression of the convention. Each and every COA member owes it to him- or herself to make plans now to attend next year's convention in **Mobile, Alabama, from 31 May to 4 June 2006**. Events such as this are fun and educational and no matter what your experience level, from amateur to professional, they increase your enjoyment of shell collecting and conchology.

## Seven Seas Shell Show Winners

North America – **Jack Lightbourne** (*Pterynotus lightbourni*)
South America – **Marilyn Northrop** (*Babelomurex juliae*)
Africa – **Marilyn Northrop** (*Murexiella exquisitus*)
Asia – **Marilyn Northrop** (*Pterynotus richeri*)
Europe – **Gene Everson** (*Charonia lampas*)
Australia – **Carl Ehrlich** (*Conus lamberti*)
Antarctic – **Gene Everson** (*Boreotrophon scotianus*)
Worldwide Self-Collected – **Kermit & Gloria Pearson** (*Plesiotriton mirabilis*)

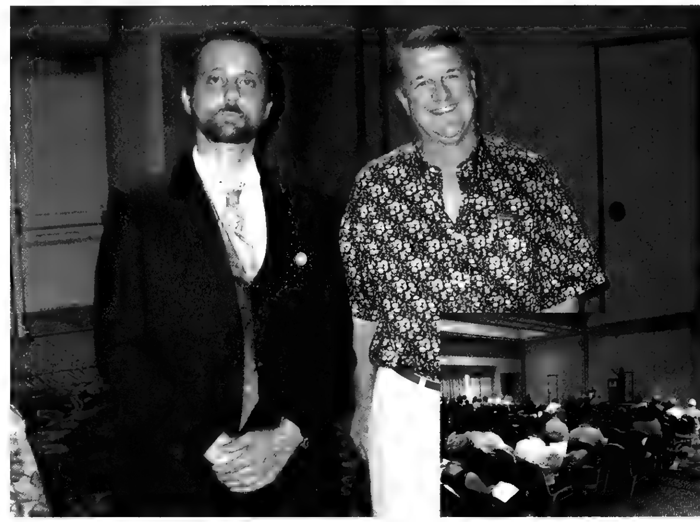
## Mermaid Parade

Favorite Mermaid – 1st **Anne Joffe**, 2nd **Phyllis Gray**, 3rd **Anne Joffe**
Mermaid With Real Shell(s) – 1st **June Bailey**, 2nd **Rusti Stover**, 3rd **Georgette Laforet**
Hand Crafted Mermaid – 1st **Linda Koestel**, 2nd **Anne Joffe**, 3rd **Sharlene Totten**

**Guests at the convention were greated informally by such sea-shore critters as the brown pelican (above) and more formally by convention workers (below), Anne Joffe (left) who honchoed this event, and Howard Roux (right).**

Above: Folks on the fossil field trip and (inset) some of the shells as they found them on the ground.
Below: Fossils on the Edison-Ford field trip and (inset) some of the shells they found. These men (except for the tall guy in the middle) were actually the van drivers for the trip. Left to right are: Gene Everson, Dick Att, Bob Janowsky, & John Greenlow.

Above: Part of the Texas contingent, Patty Humbird (left) & Angela Doucette (right) seem to be having a good time at the Bailey-Matthews Shell Museum open house. The evening at the museum (inset) included food, drinks, and lots of shells.



Above: Our talented auctioneers, Paul Callomon (left) and Hank Chaney (right). They worked the crowd (inset) into a frenzy and left them at the mercy of the money changers.
Below: The nice folks who had to be paid before you left the room with your auction winnings. Left to right: Bobbie Houchin, Doris Underwood, & Steven Coker.

Kim Nealon & José Leal greet visitors to the Bailey-Matthews Shell Museum on Sanibel. As museum director, Dr Leal has overseen the development and growth of this unique institution.

**Right: Some of the bourse dealers around a table of shells. Clockwise from the upper left corner: Bob Lipe, Bev Deynzer, Donald Dan, Larry Strange, Chris Takahashi, Phil Dietz, José Coltro, Marcus Coltro, Brian Hayes, and Dave & Lucille Green. We had 48 dealers this year from all over the globe. The shells ranged in price from 50¢ to at least $3,000.**

**Below (clockwise from upper left): One of the mermaid trophies given in the mermaid contest, Marilyn Northrop who won in three different categories in the shell show, sunset from the hotel, Jack Lightbourne who won in the shell show with his *Pterynotus lightbourni* (inset).**

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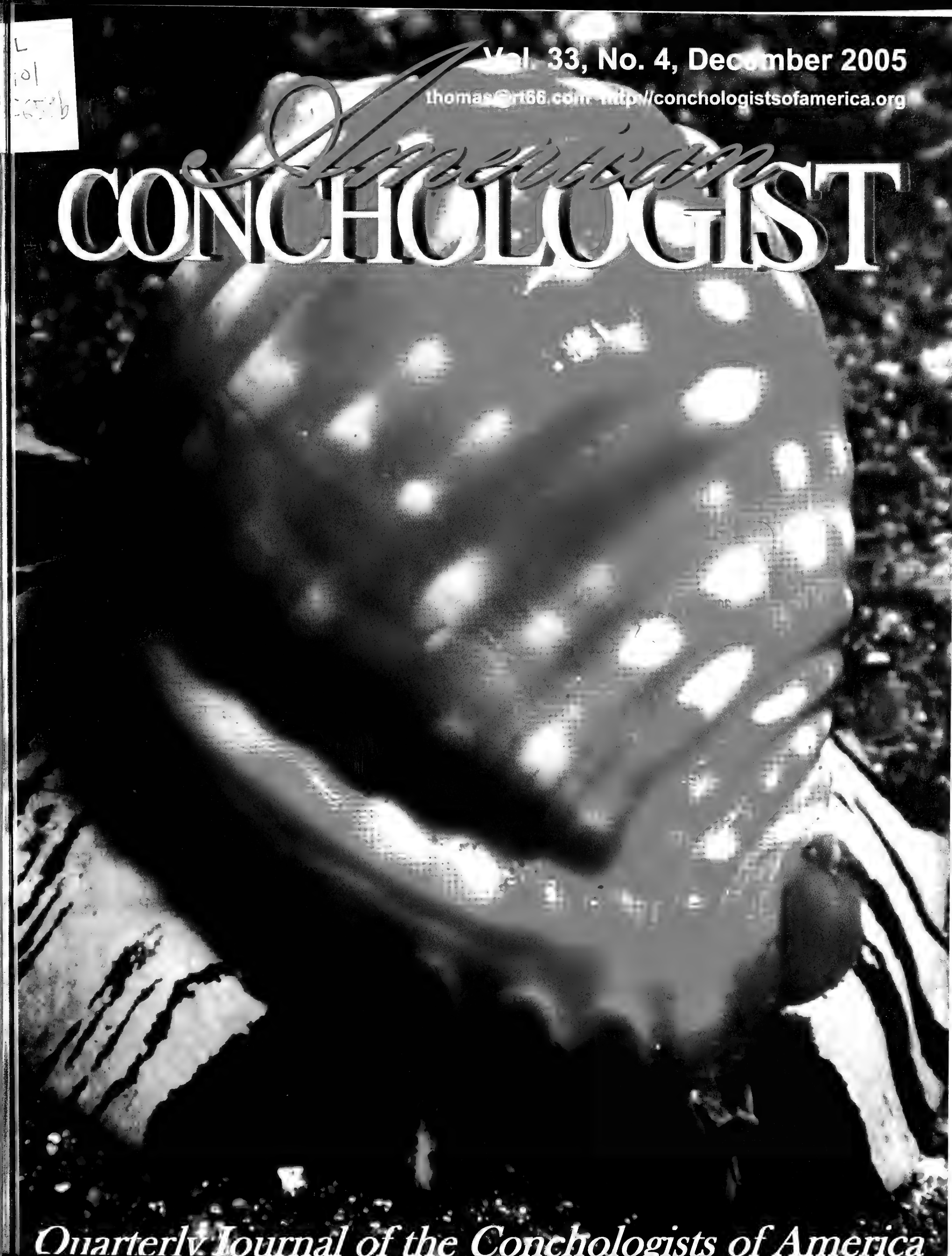
# American CONCHOLOGIST



Quarterly Journal of the Conchologists of America

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 33, No. 4 December 2006**

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***



**Visit the COA website: http://conchologistsofamerica.org. Subscribe to Conch-L, the COA listserver at: listserv@listserv.uga.edu instructions on the COA web site.**

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**Front cover: *Malea pomum* (Linnaeus, 1758), the Pacific grinning tun, photographed in 60 feet of water, on coral rubble at night, Sulawesi, Indonesia. This species occurs in limited numbers throughout the Indo-Pacific, including off the shores of Panama (see article on page 23). Photograph by Charles E. Rawlings.**

**Back cover: *Angaria vicdani* Kosuge, 1980, Victor Dan's Angaria or delphinula. To date this species is only known from the Philippine Archipelago, especially in deeper waters in the southern Philippines. Photo by T. Eichhorst.**

## NEW STROMBID NAMES AND KNOWLEDGE OF INTER-RELATIONSHIPS

A paper in the Brazilian journal Arquivos de Zoologia came to my attention after my submission of the *Strombus* article in the last issue of American Conchologist. It contained new and fascinating information about *Strombus* phylogeny. The paper is: Simone, L. R. L., 2005. Comparative morphological study of representatives of the three families of Stromboidea and the Xenophoroidea (Mollusca, Caenogastropoda), with an assessment of their phylogeny, Arquivos de Zoologia, São Paulo, 37(2): 141-267. In this manuscript, the expert anatomist, taxonomist, and cladist Luiz Ricardo L. Simone showed (in English!) that *Strombus gigas* should now definitely be placed in another genus. Strictly, it should now be *Eustrombus gigas* (Linn., 1758). The only true *Strombus* species remaining are three tropical American ones, *S. pugilis, S. alatus* (that Simone considers different), and the western American *S. gracilior*. Four other former "subgenera" of *Strombus* (and perhaps others after more species are studied) are now ranked as genera by Simone (*Aliger*, *Tricornis*, *Conomurex* and *Canarium*). Some people "play" with scientific names, but these changes are not mere play; they are based on detailed comparative anatomical data that would be hard to refute biologically. Taxonomy is a science, and sometimes new data necessitate unfamiliar new names or name combinations. One could perhaps quibble about some of the rankings of taxa, and I am sure some will. Interestingly, Simone agrees with me that some *Lambis* species are more closely related to some of the species in old *Strombus* than to each other. *Lambis* is still ranked (reluctantly?) as a genus by Simone, but it is probably not that distinct from some old *Strombus* species.



Robert Robertson
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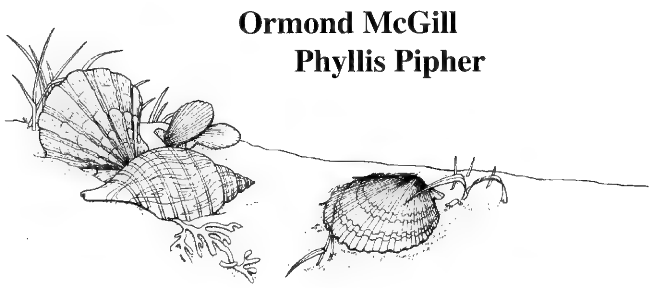
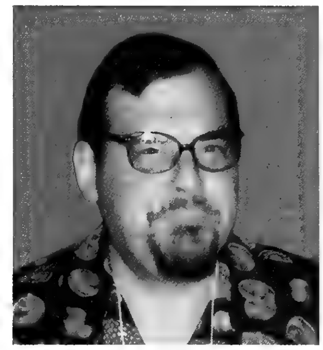
## In Memoriam

**Dennis Dworak**
**Ormond McGill**
**Phyllis Pipher**





## Jordan Star's Web Picks

**Information about Charles Darwin** http://www.aboutdarwin.com/ This site is constantly gaining added features. You can learn all about Darwin, the voyages of the H.M.S. Beagle, the writing of The Origin of Species, etc. This is surely a timely topic what with today's issues over evolution. There are many other sites that cover Darwin (a Goggle search will net over 9 million), but this is a good place to start. Don't forget www.gutenberg.net to get free downloads of many early classics by writers such as Darwin.

**Brazosport Museum of Natural Science** http://www.bcfas.org/museum/ An interesting Texas museum site with lots of general images, but it lacks detailed images. There is one intriguing image of the museum display area that is almost a 360-degree view. The museum is mostly concerned with fossils and seashells. Some images are a bit dark.

**Shell Web Sites** www.reference.com/Dir/Recreation/Collecting/Shells/ A select listing of links to shell clubs, museums, publications, commercial sites, and on line collections. I didn't visit all, as it would take all day.

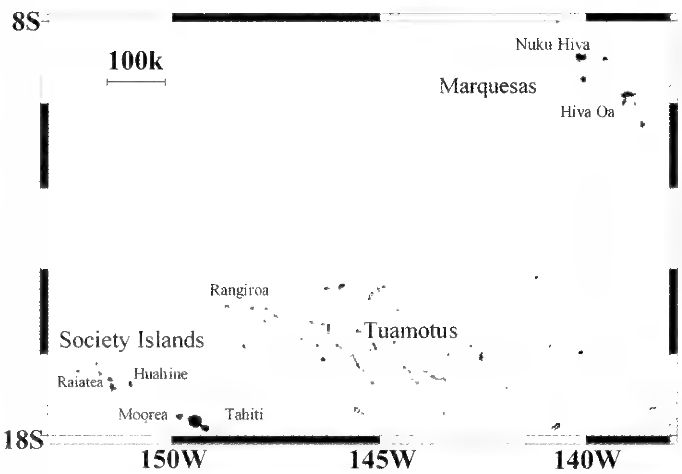
**Home & Garden TV** www.hgtv.com/hgtv/ah_hobbies_interests/article/0,1801,HGTV_3121_1397769,00.html Admittedly this is a lengthy web address, but if you have problems, go to www.hgtv.com, click on "At Home," then "hobbies and interests," then "identifying seashells," and you'll find the article. This is a rather basic level article with images of a few beach specimens to supposedly help with indentification. Includes references and links to shell books for the beginner.

**CephBase: Living Cephalopods** http://www.cephbase.utmb.edu/ This is a site with tons of up-to-date information on living cephalopods (octopus, squid, cuttlefish and nautilus). The site includes approximately 6,000 papers on taxonomy, ecology, behavior, etc. There are some 1,642 images of cephalopods and 146 video clips. A related page created by the same person but a bit less technical is The Cephalopod Page at: http://www.nhm.ac.uk/hosted_sites/tcp/ Both of these sites are worth a visit.

Links good; 11-16-05

# A Stepping-Stone to Marine Conservation: The Importance of Island-Hopping

by Eric Crandall




*French Polynesia*

Sometimes it helps to hop like a snail. This odd image pops into my mind as the twin turboprop aircraft descends out of the blue South Pacific sky and alights on the narrow strip of white coral between the ocean and Rangiroa's lagoon. Although I've come in search of snails, my trip through French Polynesia has been anything but snail-like. In less than a month I've island-hopped through three archipelagos: the lush Society Islands to the southwest, the rugged Marquesas to the northeast, and now I've arrived in the Tuamotus – the vast scattering of ancient atolls that lies between the other two archipelagos. This array of low coral islands, like garden stepping-stones between the two high island archipelagos, provides exactly the right setting to study how snails hop between them.

* * * *

"Hop" is probably not the first verb that comes to mind when you think of snails. It's difficult to imagine a snail traveling hundreds of kilometers between islands, yet this is what marine snails frequently do. Some species, like pteropod sea butterflies, swim in the ocean as adults. Most, however, undertake this journey in their youth, as tiny larvae called veligers. In fact, the majority of marine organisms have similar tiny larvae that live the nomadic life of the plankton. It is these larvae that achieve most long-distance movement in the ocean, while the adults of most species stay put in their favored habitat. Cast adrift on ocean currents for days, weeks, or months, the larvae of many marine fish or invertebrates may often wind up quite far from where they were conceived.

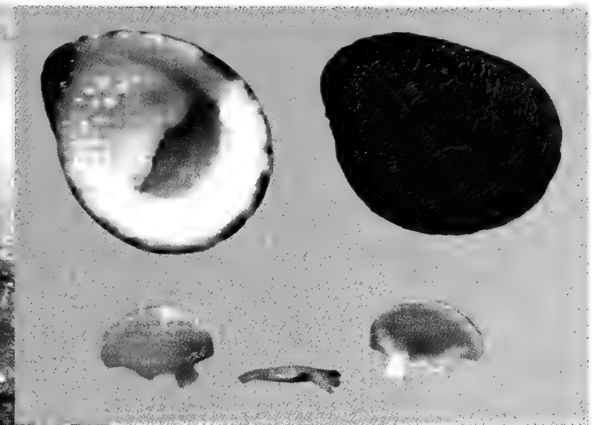
At least, that is what most marine biologists thought until about a decade ago, and with good reason. They found the larvae of intertidal animals in samples of plankton netted hundreds of kilometers from land. They calculated the distance a larva could travel in a given current over a given time, and came up with estimates in the hundreds or thousands of kilometers. It seemed clear that ocean currents were veritable highways for larvae; the California Current must be to larvae as the Pacific Coast Highway is to SUVs.

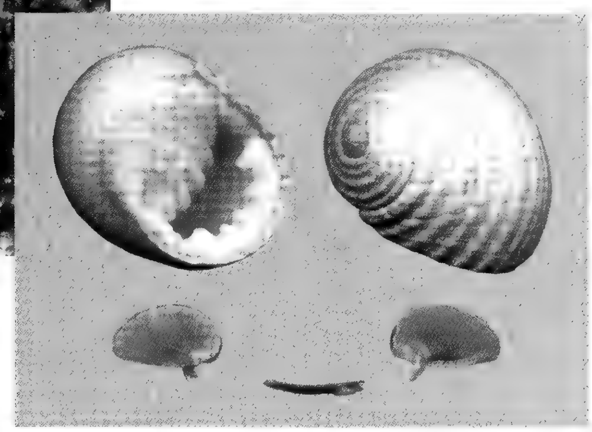
As is often the case in science, a closer look revealed that things were more complex than that. Recent studies have used unique chemical and genetic signatures to tag larvae similarly to the way DMV uses vehicle identification numbers to tag cars[1, 2]. These studies have found, for the most part, that larvae do not move nearly as far as they potentially could. Although we thought larvae regularly traveled the distance from San Francisco to Los Angeles, most only make it to Santa Cruz. It seems that many larvae, especially larval fish, may be swimming vertically to escape major currents and get into nearby eddies or minor currents moving in the opposite direction. Essentially, some larvae are lollygagging in the rest areas, and some are exiting early, and sneaking home on the side streets. Even with this new knowledge, however, a basic understanding of how millions of larvae the size of this dot [.] move through the vastness of the open ocean remains a primary goal for marine biologists.

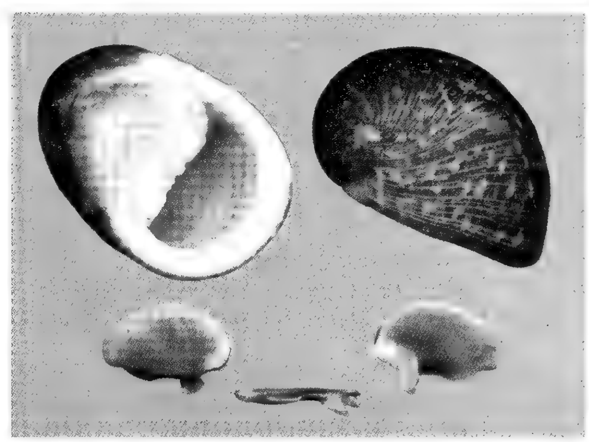
**How to Think Like A Snail**

In bad phrasebook French, I try to explain to the host at my pensión: "J'etudie les escargots pour l'université." I get the same smile and puzzled look that I've gotten throughout French Polynesia. I wish my French were better, but it's hard to explain my snail obsession even in English. I've come to French Polynesia in search of snails from the family Neritidae. I've specifically targeted three intertidal species from the genus *Nerita*: *N. plicata,*

**Tuamotu atoll from the air. Plenty of habitat for marine species, but this is no fit stopping place for any of the freshwater nerites. The Tuamotu archipelago spans an area equal to Western Europe.**







**Above: *Nerita plicata* Linnaeus, 1758, in situ on rip-rap outside my bungalow on Rangiroa. This species is typically found exposed above the water line during daylight hours.**
**Right: The marine nerites being studied. Top: *Nerita albicilla* Linnaeus, 1758; middle: *Nerita plicata*; and bottom: *Nerita polita* Linnaeus, 1758.**

*N. albicilla,* and *N. polita.* I'm also searching for their freshwater family members: *Neritina canalis, Clithon spinosus,* and *Septaria taitana*, but I know I won't find them on this arid atoll.

All I have to do is step outside my bungalow to find one species: white globular shells with the characteristic spiral ribs grazing on some intertidal riprap, *Nerita plicata.* This species is weedy, they're happy on almost any surface in the high intertidal zone. As I grab each snail, I stick a toothpick into the aperture to stop it from closing, and then I drop the snail into ethanol to preserve it for genetic analysis.

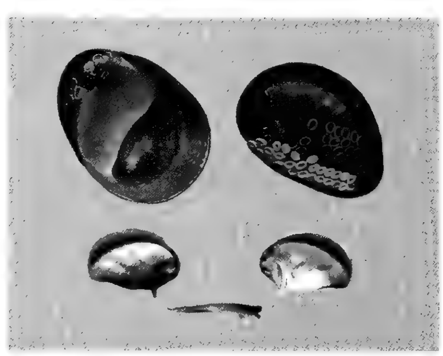
Finding other species of *Nerita* requires more patience. By night I use a flashlight to search the conglomerate platform for the swirled oval shape of *Nerita polita* and the splotchy *N. albicilla*. I have to collect at night because by day these species bury themselves in the sand or hide under rocks. They also each seem to prefer a specific arrangement of sand and rock, so that I'll go for an hour without seeing any and then suddenly spot three in a row. After several hours of this evening Easter egg hunt, I tally only eleven *N. polita* and zero *N. albicilla*. What's worse, on close inspection the *N. polita* turn out to be *N. antiquata*, not a target species.

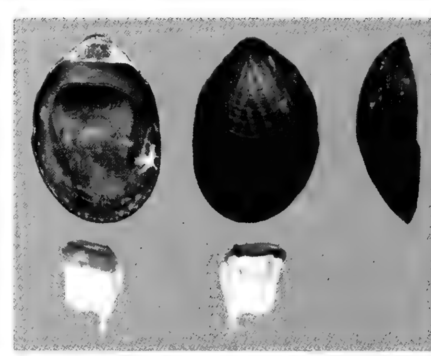
* * * *

What I find most useful about Rangiroa is what is not here. There are no freshwater streams in the Tuamotus. On the volcanic high islands in the Societies and Marquesas, these streams, besides plunging over waterfalls into verdant pools for tourist brochures, also provide a home for the freshwater neritids. These species possess a trait that is rare in freshwater animals. Their larvae continue to return to the ocean to be dispersed by currents just like their marine cousins (such a life cycle is called amphidromous).

So what can I learn from these snails about larval island hopping? Sometimes it helps to think like a snail. To *Nerita plicata*, Rangiroa is Bali Hai - a giant ring of perfect intertidal habitat. A larva from this species lucky enough to drift across it can settle down and have kids. For a larva from a freshwater species, however, Rangiroa offers no amenities. They must push on until they find an island with streams. Over time, I predict that *Nerita plicata* will find it easier to move between the Society Islands and the Marquesas because they can do it in a series of generational hops, using the Tuamotus as stepping-stones. Freshwater neritids like *Neritina canalis* have to do it in a single giant leap of 1400 kilometers, which as I mentioned above, does not seem to happen very often.

**Above: Le Lagon Vert (The Green Lagoon), made up of the many small islands of the Rangiroa atoll. Tres beau!**
**Below: The freshwater nerites in this study. Left: *Clithon spinosus* (G.B. Sowerby I, 1836); middle: *Neritina canalis* G.B. Sowerby I, 1825, and right: *Septaria taitana* (Mousson, 1869). All of these species prefer fast running fresh water and each has a veliger stage that washes out to the ocean.**
**Opposite Page: *Clithon souleyetanus* (Récluz, 1842) in a swift-running freshwater stream on Nuku Hiva in the Marquesas.**





I plan to test this prediction using genetic methods to build a family tree for each species. If *Nerita plicata* is able to make it through the Tuamotus in only a couple of generations, then I would expect the ones in the Society Islands and the ones in the Marquesas to be close kin. On the other hand, *Neritina canalis* samples from those archipelagos should be much more distant relatives. If this proves to be true then these snails will have helped us to gain a slightly better understanding of how larvae move through the ocean – lots of short hops, one per generation.

### Stepping-Stones to Conservation

Using islands as stepping-stones to move across the ocean seems obvious. When the Lapita culture of coastal New Guinea rapidly colonized the islands of the South Pacific, they did so in

stepping-stone fashion. These ancestors of the modern Polynesians navigated single and double canoes using only stars and wave patterns as their guides. They traveled farther and more accurately than any humans before them, but they didn't travel from New Guinea to Hawaii in a single voyage. Instead they moved through the Solomons Islands, Fiji, Samoa, the Societies and the Marquesas[3]. During World War II, General Douglas MacArthur used the Solomon Islands as stepping-stones in the bloody struggle to approach within bombing distance of the Japanese islands.

In 1967, another famous MacArthur, the ecologist Robert MacArthur, published a book together with E.O. Wilson called *The Theory of Island Biogeography*[4]. This book became well known for its prediction that the number of species on an island is proportional to its size. This concept has been important for designing networks of national parks and reserves (which can be viewed as islands) for the protection of terrestrial biodiversity. In another chapter of the same book, Macarthur and Wilson also predict the importance of intermediate stepping-stone islands to increasing the movement of species between islands. This has also gotten some attention in a terrestrial context. Neither of these concepts has ever gotten much consideration in the realm of marine conservation, most likely because it was thought that even if the adults were limited to a single habitat, their larvae could travel almost anywhere.

Now, as fisheries around the world go belly up[5], it is important for marine conservation science to catch up with terrestrial conservation science. Recently, 161 marine scientists signed a consensus statement that calls for networks of marine reserves for the long-term conservation of marine biodiversity and fisheries[6]. The reserves in these networks, whether they are along a coastline, or among islands, will serve as stepping-stones that "catch" incoming larvae, protect the adults, and allow them to reproduce safely. A better understanding of the stepping-stone dynamics of these larvae will lead to better reserve design and a better conservation effort.

* * * *

The next day I hook up with a tourist excursion to the next islet over in the circular chains of islets that make up Rangiroa's atoll, Le Lagon Vert (The Green Lagoon). While the rest of the group swims and sunbathes in this beautiful setting, I splash around the intertidal zone looking for snails (and stomatopod shrimp for my advisor), but to no avail. I find plenty of *N. plicata*, a few shrimp, and lots of other cool shells, but no others of my target species. This is a bit disheartening, but later I learn that *N. albicilla* and *N. polita* most likely do not occur as far east as Rangiroa. As I prepare for my flight back to Tahiti and then home, I'm quite satisfied with my collections, despite the exceptions given above; in other sites I've gotten pretty much everything I need. If everything goes well in the laboratory (and so far it has) neritid snails may help move us one small step closer to understanding a big problem in marine biology.

**Eric Crandall** (veliger@bu.edu) is a PhD Candidate at Boston University. His trip to French Polynesia was funded partially by the Walter Sage Memorial Fund awarded by Conchologists of America.

**References:**

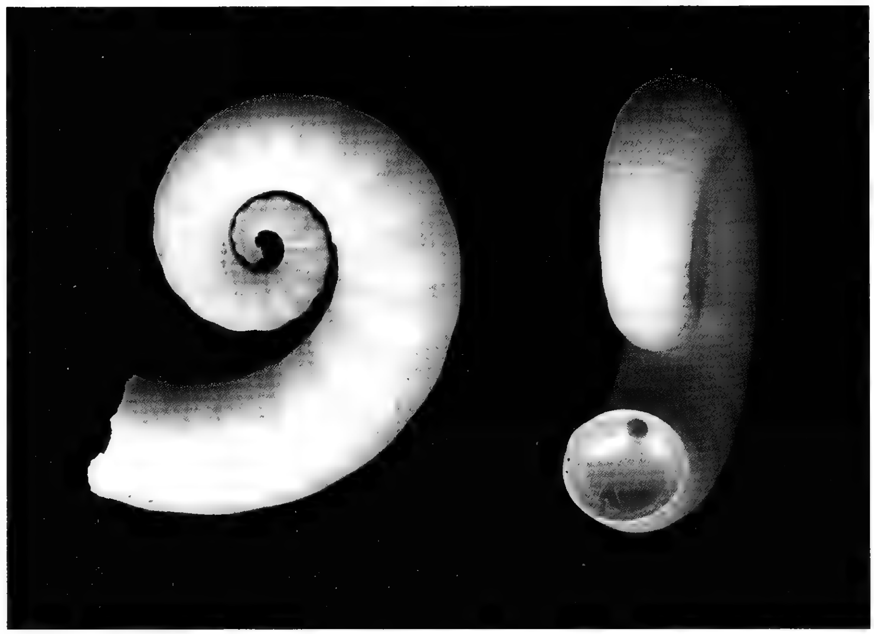

1. **Barber, P.H. et al.** 2002. Sharp genetic breaks among populations of *Haptosquilla pulchella* (Stomatopoda) indicate limits to larval transport: patterns, causes, and consequences, Molecular Ecology 11(4): p. 659-674.
2. **Swearer, S.E. et al.** 1999. Larval retention and recruitment in an island population of a coral-reef fish, Nature 402(6763): p. 799-802.
3. **Diamond, J.** 1997. Guns, Germs and Steel, New York, W.W. Norton and Company, Ltd. pp. 480.
4. **MacArthur, R.H. & E.O. Wilson.** 1967. The Theory of Island Biogeography, Princeton, Princeton University Press, pp.203.
5. **Pauly, D., et al.** 1998. Fishing down marine food webs, Science 279(5352): p. 860-863.
6. **NCEAS.** 2001. Scientific Consensus Statement on Marine Reserves and Marine Protected Areas.

# *Spirula spirula* (Linnaeus, 1758) The The Ramshorn Shell

## by Zvi Orlan

I am sure most of us know the cephalopod *Spirula spirula,* the only species in the family Spirulidae Owen, 1836. I have personally found specimens in a number of locations: the Canary Islands, the Bahamas, and South Africa. They are also known from the tropical and subtropical Indo-Pacific. I had never seen the living animal, so it was somewhat of a revelation to see pictures of this interesting species.

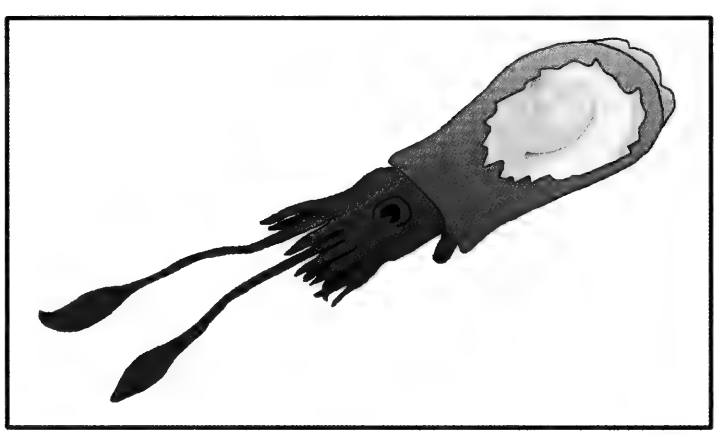
For many years only the shell was known and seldom was there any trace of the animal, but by 1912 a dozen living specimens had been found. From 1920 to 1922, a Danish Expedition led by Johannes Schmidt undertook what was to become his classic research into the life history of the common eel (*Anguilla anguilla).* Crossing and recrossing the Atlantic Ocean, the research team towed planktonic nets at different depths. Among the animals found, were specimens of *Spirula spirula* that were caught at various depths, from shallow waters down to 1500 meters. After subsequent expeditions, it was found that their zone of greatest abundance was between 300 and 500 meters, where they may occur in dense schools during the day, rising to 200 to 300 meters or less (in areas of upwelling) at night. Their vertical migration is of special interest, but let us first trace the characteristics of the species, which have been carefully studied.



***Spirula spirula*** **(Linnaeus, 1758), 18mm, as known by most shell collectors. A common shell found washed ashore on temperate and tropical beaches throughout the world. Photo by Tom Eichhorst.**

The animal measures about 45mm in length. From top to bottom is a cylindrical mantle, which contains in its posterior end the chambered shell. The shell is creamy-white and resembles a ram's horn, hence the common name. It is spirally curved, has 25-37 chambers, and is visible within the animal from both dorsal and lateral aspects. The chambers are filled with gas that is used to buoy the animal up in the water. On both sides of the posterior end are 2 small rounded fins, used for swimming slowly up and down. Between the fins is a large photophore that shines with a steady yellow-green light that can remain at an even intensity up to several hours. The head has large bulging eyes, possibly an aid to catching prey in a dark environment. The lower part of the body consists of 8 short arms connected by a broad web and 2 long tentacular clubs, both with rows of suckers. When swimming the arms are all kept close together in a cone shape. The muscles of the arms and tentacles suggest they are active in the capture of prey. The body is reddish to light brown with a cream to white mantle. The animal lives with the head and tentacles directed downwards, and the shell acting as a hydrostatic apparatus. It can withdraw its head and tentacles into the mantle cavity when threatened. It squirts water from its siphon when alarmed, propelling itself away from the source of danger or to speed its propulsion from one zone to another.

It is not known how *S. spirula* feeds, but dissections of freshly caught specimens have revealed small crustaceans, including copepods and ostracods, and these seem to be the primary food items. No phytoplankton or non-crustacean organisms were found.



**Stylized diagram of *Spirula spirula* with cutaway showing the internal shell.**

*Spirula spirula* **showing the internal shell, the large eyes, the 8 short arms and 2 long tentacular legs, and the dark body surrounded by the lighter mantle. Photo by Michael Vecchione, used with permission. More details about this fascinating mollusk can be found in an excellent online article by Richard E. Young at: http://tolweb.org/tree?group=Spirula_spirula.**

The radula is reduced to a vestigal form, a rare occurrence in cephalopods. *S. spirula* can inflict a powerful bite with its sharp black beak. It has a large posterior salivary gland, suggesting that its prey may also be envenomated. It also has a statocyst that keeps it in upright equilibrium. *Spirula* probably have a life span of less than two years. When the animal dies, the empty shells, which are very light, float to the surface and are carried by ocean currents. These small ramshorn-like shells may then be found far from the animal's true habitat.

There may be some doubt as to whether *Spirula spirula* can be designated a living fossil, but no doubt it, together with the nautiloids of the present, are modern representatives of past geological eras when the cephalopods were among the most abundant of sea creatures. During the Paleozoic and Mesozoic they diversified, and the ammonoids and belemnoids that were among the main orders of the cephalopods, became predominant biota of the oceans. Although the origin of *Spirula spirula* is obscure, the belemnoids had an internally chambered shell, and have been extinct since the beginning of the Cenozoic. It may be that *Spirula spirula* is the sole surviving remnant of this once flourishing group, the only one of the cephalopods retaining an inner chambered shell. Who would have thought such a common looking ramshorn, or post horn as it is sometimes called, had such an unusual history. This is an unusual and interesting species that probably has much to tell us about the varied and fascinating enigmas of evolution.

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Kiryat Motzkin 26382
Israel

## DUES RENEWAL

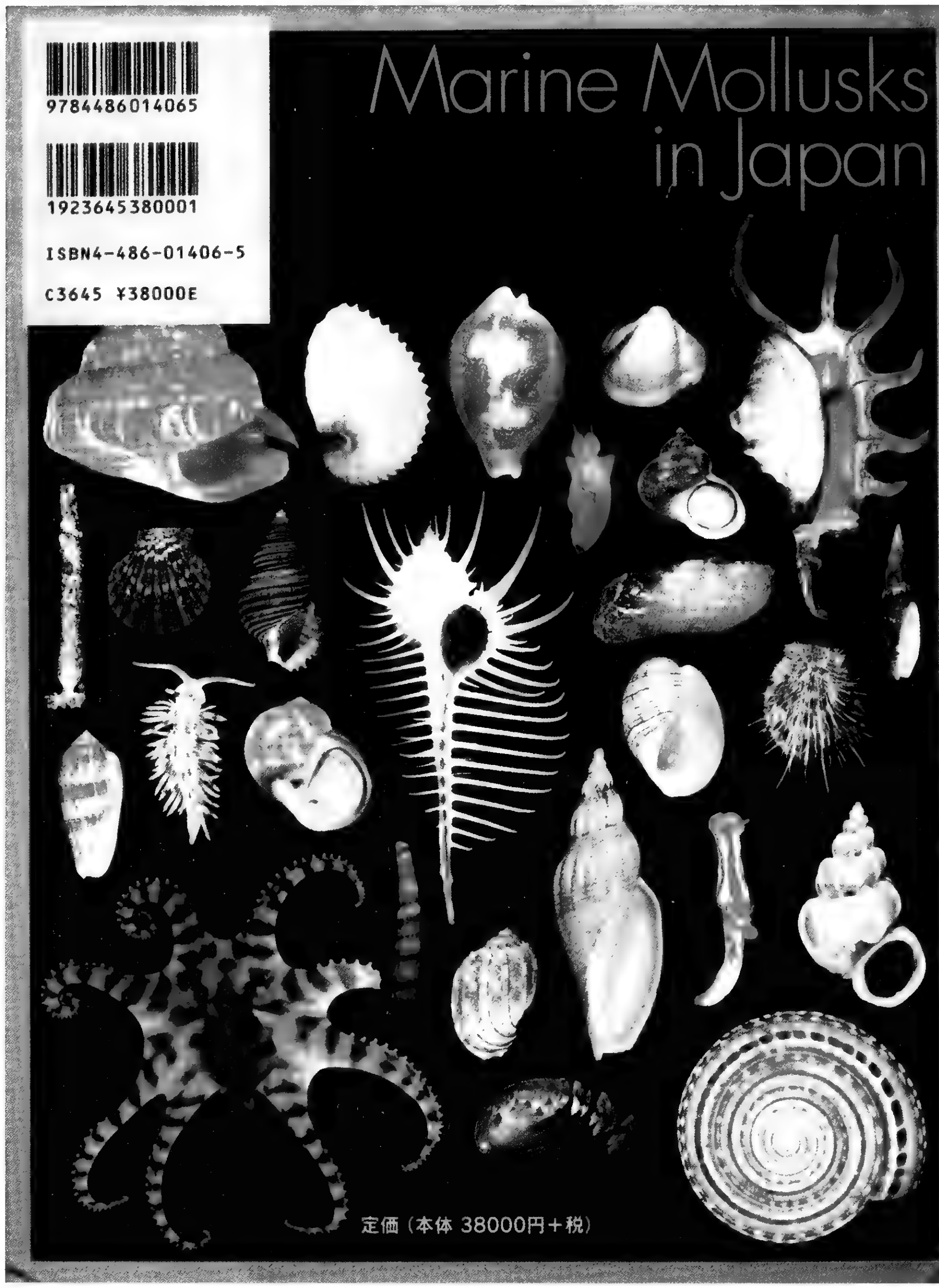
It's that time again! Dues renewal notices have been sent to all members except those who prepaid. Dues are the same as last year. Please send in promptly as reminder notices add to our expenses.

If you have a change of address or name, please advise me!

Doris Underwood, COA MembershipDirector
698 Sheridan Woods Drive, West Melbourne, FL 32904
dunderwood1@cfl.rr.com

# Book Review: Marine Mollusks in Japan

**Edited by Takashi Okutani, 2000, Tokai University Press, 1173pp.**




I hope I will be excused for writing this review a few years after publication, but the book was so expensive, I delayed my purchase. Thankfully my wife bought it for me as a gift for my birthday, and I am now the proud owner of this excellent volume.

Published in Japanese and English, it was drawn up by 11 authors and contains 5,106 species. It is not only illustrated by excellent colored photographs of the shells, but on most pages there are a few colored prints of live specimens, stating at what depths they were spotted.

The book starts with a short "Format and Terminology of the different Classes of Mollusks," followed by a map of Japan and its islands, with the localities where shells were found shown for easy reference. Then follows a list of the classes and families with the author listed for each section. The color plates that follow often show both sides of the shell, very important to help in identification. On the page opposite the plate is text describing the salient features of each species and the depth at which it was found. It's the first time I have seen illustrations of live specimens included throughout a shell book. The species within each family are numbered consecutively, so we know how many species are found in each one; this is most useful information. The habitat is usually noted, but unfortunately (for my interests) endemism is not mentioned.

Many subgenera have been elevated to genus level, with which some malacologists may not agree. I have retained the older genus name used in many species as it is most convenient for me. I thought I probably had very few Japanese shells in my collection, so I set out to see just how many I had. I was absolutely astounded to find I had 887 taxa, mostly from adjoining regions, the third largest number in my collection from any one country!! I really feel I can now claim to know some of the Japanese shells.

To the best of my knowledge, the 5,106 Japanese species covered in this volume is the largest number of marine mollusks listed in such a work from any single country. The many eminent malacologists who contributed to this outstanding publication are to be congratulated. Its value is not only to students of Japanese mollusks, but it is extremely valuable to all conchologists and malacologists interested in the Indo-Pacific. I was recently presented with a collection of shells without any location data, and I had many problems identifying these shells. I found this book to be of great help. Many of the shells that I couldn't locate in the 70 books on shells in my library were found in this wonderful volume.

Summing up, this book has added a wealth of information to my meagre knowledge. To all parties interested in Indo-Pacific shells, I strongly recommend this fascinating book, keeping in mind the rather high price. Thanks to all of the authors, and to Takashi Okutani especially, for their fine contribution to our knowledge of not only Japanese shells, but those of the entire Indo-Pacific.

**Zvi Orlin**
**zviorlin@actcom.co.il**

# 2006 SHELL SHOWS & RELATED EVENTS (Jan. – Aug.)

**- Following information is subject to change. Please verify with individual organization -**

Jan. 21-22 **SPACE COAST SHELL FESTIVAL**, Melbourne, FL
The Melbourne Auditorium, 625 E. Hibiscus Blvd.
Jim & Bobbi Cordy, 385 Needle Blvd.
Merritt Is., FL 32953 (321) 452-5736
E-mail: corshell@earthlink.net

Jan. 27-29 **BROWARD SHELL CLUB SHOW**, Pompano Beach, FL
Pompano Beach Rec Center, NE 18th Av. & NE 6th St.
Linda Sunderland, 9370 NW 39th Street
Sunrise, FL 33351 (954) 749-9858
E-mail: klshells@mindspring.com

Feb. 17-19 **SARASOTA SHELL SHOW**, Sarasota, FL
Sarasota Municipal Auditorium, Tamiami Trail
Fran Schlusseman, 11328 Rivers Bluff Circle
Bradenton, FL 34202 (941) 739-0908
E-mail: hanksfran@aol.com

Feb. 24-26 **ST. PETERSBURG SHELL SHOW**, Treasure Is., FL
Treasure Is. Community Center, 1 Park Place
Bob & Betty Lipe, 348 Corey Avenue
St. Pete Beach, FL 33706 (727) 360-0586
FAX: 360-3668
E-mail: blipe@tampabay.rr.com
Exhibit form: http://web.tampabay.rr.com/shellclub

Mar. 2 - 4 **SANIBEL SHELL SHOW**, Sanibel, FL
Sanibel Community Center, Periwinkle Way
Marilyn Northrop, 1528 Education Court
Lehigh Acres, FL 33971 (239) 694-1837
E-mail: mjnorthrop@worldnet.att.net

Mar. 11-12 **6th AUSTRALIAN NATIONAL SHELL SHOW**, Sydney, Australia
John Franklin, Ryde Eastwood Leagues Club, 117
Ryedale Road, West Ryde NSW 2114 (02) 9807-2444
dif3@bigpond.net.au

Mar. 18-19 **XVIIIéme RECONTRES INTERNATIONALES DU COQUILLAGE,** Paris, France
Bourse de Commerce, 2 rue des Viarmes, 75004 Paris, France
M. & D. Wantiez, 88, Rue du General Leclerc
95210 Saint Gratien, France 33 (1) 34-17-00-39
E-mail: wantiez.mada@wanadoo.fr

Mar. 18-19 **TREASURE COAST SHELL CLUB SHOW**, Jensen Beach, FL
Langford Park Field House, 2369 N.E. Dixie Highway
Carole Marshall, 932 Cochran Drive,
Lake Worth, Florida, 33461-5711 (561) 582-2148
E-mail: marshalldq.aol.com

Mar. 23-25 **MARCO ISLAND SHELL CLUB SHOW XXIV**, Marco Is., FL
Marco Presbyterian Church, Elkcam Circle
Amy Tripp, 961 Swallow Ave., #208
Marco Island, FL 34145 (239) 393-1770

Apr 29 **BRITISH SHELL COLLECTOR'S CLUB CONVENTION,** N. Romford, England
North Romford Community Centre, Clockhouse Lane, Collier Row
Tom Walker, 38 Redlands Road
Reading, Berkshire RG1 5HD, England
44 (118) 987-4294
E-mail: tom@tmwalker.co.uk

May 6 - 7 **XVI BELGIUM INTERNATIONAL SHELL SHOW**, Antwerp, Belgium
Schijnpoort, Schijnpoort Straat
L. Broekmans, Gerststraat 4
B-2861 O.L.Vrouw-Waver
Belgium 32 - 15 76 15 77
E-mail: bvc.international@pandora.be

Jun. 22-26 **42nd OREGON SHELL SHOW,** Portland, OR
Oregon Museum of Science & Industry
Maxine Hale, 347 N.E. 136 Avenue
Portland, OR 97230-3308 (503) 253-5379

May 31 – Jun 4 **CONCHOLOGISTS OF AMERICA ANNUAL CONVENTION,** Mobile, AL
The Mariott Renaissance Hotel, 64 S. Water Street
Doug Shelton, 2370 Hillcrest Road
Suite G, PMB 236
Mobile, AL 36695-3838, U.S.A. (251) 533-6383
e-mail: unio@aol.com

Jun. 17-18 **JACKSONVILLE SHELL SHOW,** Jacksonville, FL
Morocco Shrine Temple, 3800 St. Johns Bluff Road
Judy Blocker, 2109 Beach Avenue
Atlantic Beach, FL32233-5932 (904) 246-4012

Jul. 29 – Aug 3 **JOINT AMERICAN MALACOLOGICAL SOCIETY/WESTERN SOCIETY OF MALACOLOGY MEETING,** Seattle, WA
University of Washington
Dr. Roland C. Anderson, 1483 Alaskan Way
Seattle, WA 98101, USA (206)386-4346
e-mail: roland.anderson@seattle.gov

**DONALD DAN**, COA Award Chairman
6704 Overlook Drive
Ft. Myers, FL 33919
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Tel. Voice & Fax (239) 481-6704 E-mail: donaldan@aol.com

Please use this form if you would like to nominate someone for the Neptunea Award

# The Neptunea Award

*The Neptunea Award was established in order to recognize outstanding and distinguished service to conchologists and malacologists. This award is given to up to 3 awardees for:*

1. *Service to the organization, Conchologists of America*
   *OR*
2. *Service to the scientific interests of Conchologists of America*
   *OR*
3. *Service to the science of Malacology as it applies to conchologists*

Nominations are due by March 15, 2003. The board will choose the recipient(s) from the nominations. Nominees are not limited to COA members.

Name of nominee: ____________________________________________

This person deserves this award because: (Please write a detailed paragraph describing why this person deserves this award.)

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Mail before March 15, 2006 to:
Carole Marshall, COA Trustee
932 Cochran Drive
Lake Worth, FL 33461-5711 or email information to: marshalldg@aol.com

# *Conus kulkulcan* Petuch, 1980

## by Ted Kalafut

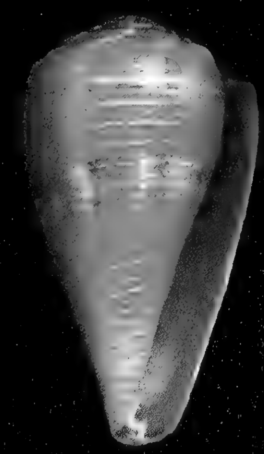
I first went to Roatan Island, in the Bay Islands of Honduras, in 1985. I arrived in the dark of night with my very good friend Tyll Sass, ex-dive master from Stella Maris, Long Island, Bahamas. After landing we were taken to a place on the west end of the island with the portentous-sounding name of Lost Paradise Hotel. As it turned out, there was a wonderful beach in front of the hotel with a fringing barrier reef about 100 yards offshore. The shallow water out to the reef was a combination of coral rubble and turtle grass, with some occasional (and sometimes quite large) potholes. Beyond the breakwater-type reef was an amazing shelling ground - super clear blue water with the bottom gradually sloping down to an impressive drop-off, a shear vertical wall that had me back peddling very quickly. I am no hero and a short look at that abyss from an up-close and personal viewpoint was enough. In the shallower area we found a great number and variety of shells. Most were among the typical Caribbean species, but I was quite happy to find a number of species that were as yet unnamed or that were seldom seen in collections. I found three unknown (to me) species of *Latirus*, but the real find was *Conus kulkulcan* Petuch, 1980. As you can see from the accompanying photos, there are many color forms of this beautiful shell. Every day was a treasure hunt. I returned to the island for the next few years whenever I could – and Tyll became a resident.

[editor's note] *Conus kulkulcan* is considered by some authors to be a synonym or form of *Conus cardinalis* Hwass, 1792. The two are certainly similar and a "Google" search on the Internet will turn up images of *C. cardinalis* labeled *C. kulkulcan* and vice versa. Ted's images should help collectors differentiate between the two. *Conus kulkulcan* is also sometimes listed as *Conus kukulcan* (with a missing "L"). This was actually started by Petuch who, in a paper subsequent to his original description, emended the spelling of the name. According to the online database, MALACOLG 3.3.4: Western Atlantic Gastropod Database at http://erato.acnatsci.org, the change by Petuch was an "... unjustified emendation of 'kulkulcan', which Petuch (2000) states is a variant spelling of Mayan 'kukulcan.' Since his use of 'kulkulcan' in 1980 was intentional rather than a typographical or printer's error, the original spelling must stand (ICZN Article 32.5)." Similar shells from the Bahamas were named *Conus donnae* Petuch, 1998 (see the comparison on the right, photo T. Eichhorst). In any case, whether these are one, two, or three species, this small variably colored Caribbean shell is a wonderful addition to any collection. The males are smaller than the females and are usually darker and greenish colored (see Ted's photos on pages 16-17).

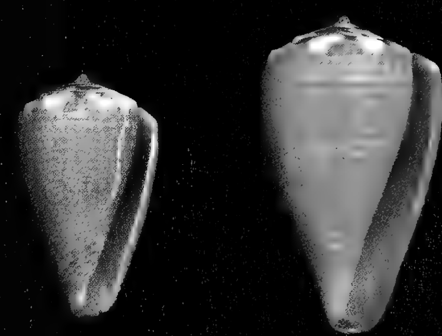
**References:**

**Petuch, E.J.** 1980. A new *Falsilyria* (Volutidae) and a new *Conus* (Conidae) from Roatan Island, Honduras (Atlantic) Nautilus 94 115-118.

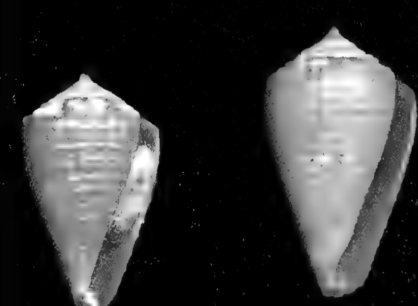
**Petuch, E.J.** 2000. A review of the conid subgenus *Purpuriconus* da Motta, 1991, with the descriptions of two new Bahamian species Ruthenica 10 81-87.



***Conus cardinalis*** **Hwass, 1792, 27mm, Belize**

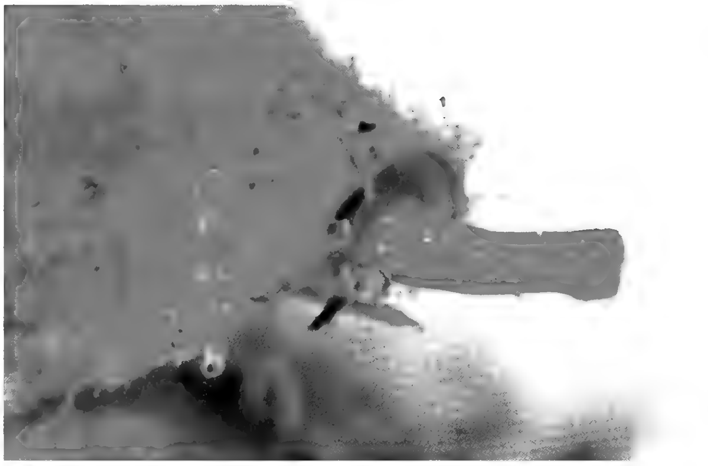


***Conus kulkulcan*** **Petuch, 1980, 15-20mm, Roatan Island, Honduras**

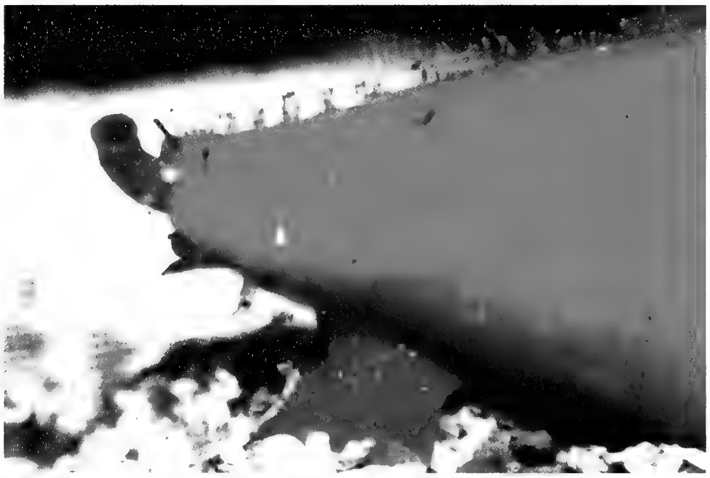


***Conus donnae*** **Petuch, 1998, 15-17mm, South Bimini, Bahamas**

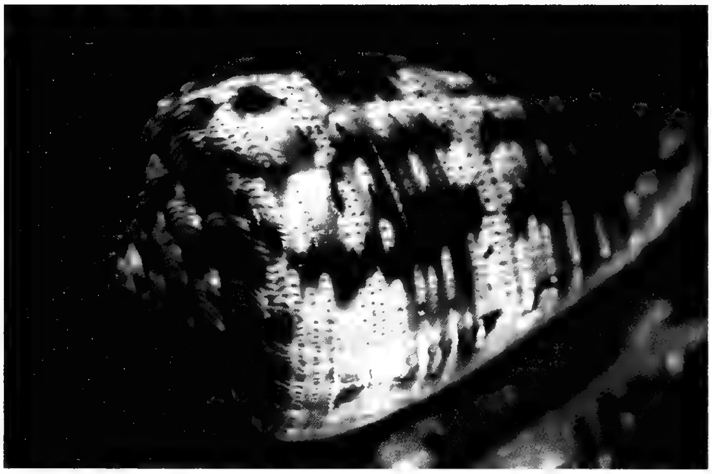
*C. kulkulcan*, 36mm, found deep inside large pile of dead coral rubble, 5 feet of water, off West End, Roatan Is. This image shows the animal with the full periostracum. Photo T. Kalafut.



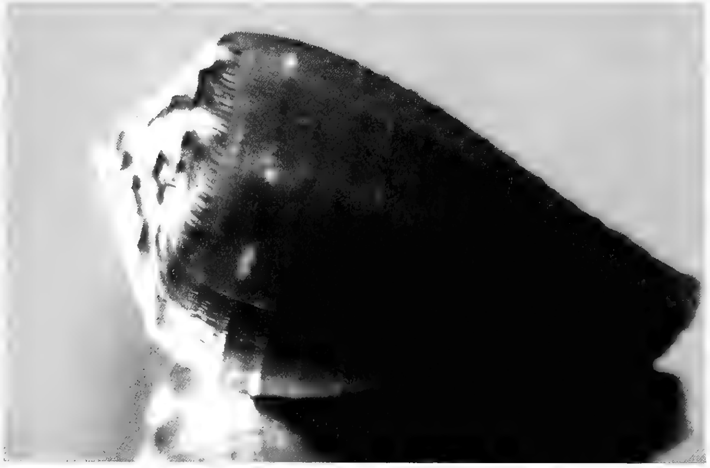
*C. kulkulcan*, close up of a red female, 35mm, Roatan Island. This image clearly shows the siphon and the small eye stalks. Photo T. Kalafut.



*C. kulkulcan*, close up of an orange female, 35mm, Roatan Is. The small eye stalks, siphon, and snout can all be seen. Photo T. Kalafut.

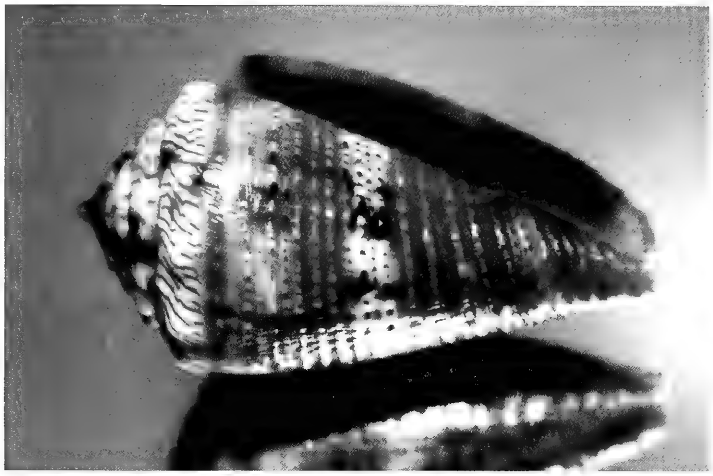


*C. kulkulcan*, female, 38mm, Roatan Is., periostracum removed. This is an unusual color for a female as it is usually the males that are brown or dark green. Photo T. Kalafut.



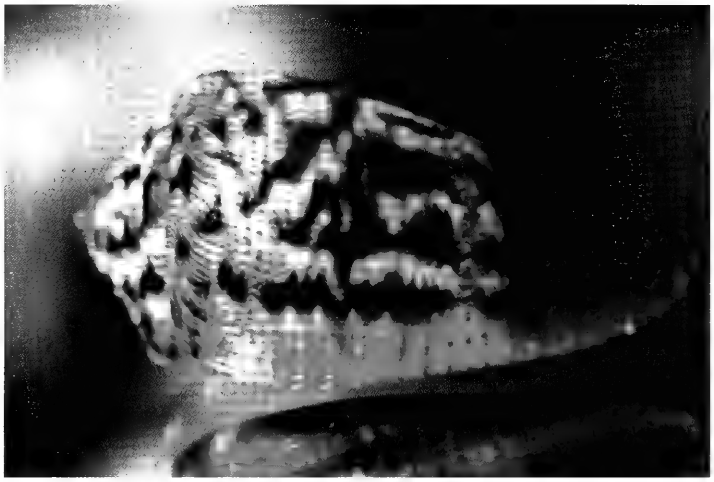
*C. kulkulcan*, female, 35mm, Roatan Is. Again, this is an unusual color for a female and while not as eye-catching as the reds or oranges, it is still a striking cone. Photo T. Kalafut.

*C. kulkulcan*, female, 36mm, Roatan Is. This animal has just disgorged a partially digested polychaete (bristle worm) after being placed in the photo tank. The stinging bristles of the worm are already dissolved. Photo T. Kalafut.

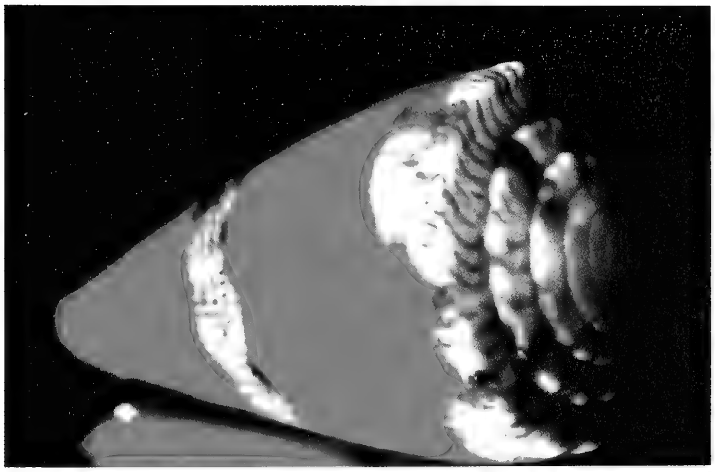


*C. kulkulcan*, male, 23mm, periostracum removed, Roatan Is. Photo T. Kalafut.

*C. kulkulcan*, males, 21-22mm, Roatan Is. Even through the periostracum you can see the dark pattern typical of the males of the species. Photo T. Kalafut.

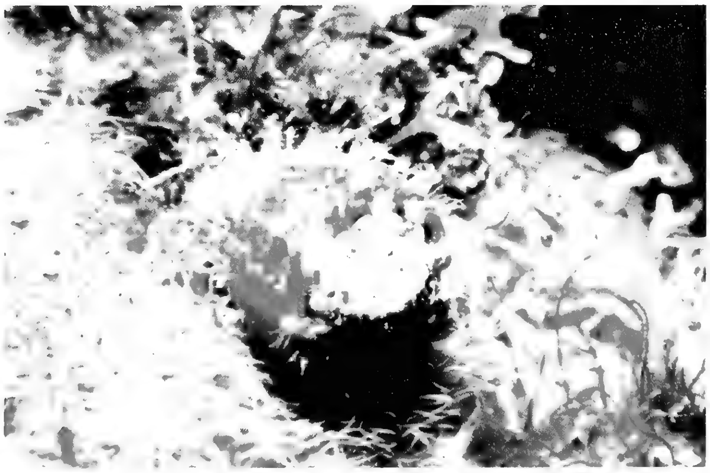


*C. kulkulcan*, male, 25mm, periostracum removed, Roatan Is. Found under rocks in 45 feet of water. Males are normally heavier shelled and greenish or brown. Photo T. Kalafut.



*C. kulkulcan*, female, 35mm, a rare color form collected on Lobster Reef off the north end of Roatan Is. Photo T. Kalafut.

*C. kulkulcan*, female, 34mm, periostracum removed, Roatan Is. This chocolate coloring is unusual and not as often seen as the specimens of red or orange. Photo T. Kalafut.



*C. kulkulcan*, in situ, foraging through algae on the reef at night in about 35 feet of water, Anthony's Key, Roatan Is. Photo by Larry Mason.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# BARGING IN - A SHELLING ADVENTURE TO THE PERLAS ISLANDS OF PACIFIC PANAMA

**by Karen VanderVen**
**Photos & Species List by Charlotte Lloyd Thorpe**
**Review by Harry Lee**

For years at shellers' gatherings tales have flown about of the marvelous shells to be found on expeditions to Gobernadora Island with Professor James Ernest. Many shellers took part in the dredging, searching on acres of mud flats, and rock turning, which enabled them to return home with bountiful numbers of exotic shells.

**View from the air as we appraoch the Contadora Islands.**

**Home sweet home for our shelling adventure. With a vessel like this we had the choice of invading an island or shelling.**

Charlotte Lloyd Thorpe, who has taken groups to Gobernadora on eight occasions, planned to visit a new location with Jimmy, the "Perlas Islands." Those whose numbers were lucky enough to come up this year to go with Charlotte were James Knight, fondly nicknamed "Jimmy James" by our group; Clair Beckmann; Ron Nixon; Gail Geibel; and myself. We flew from Miami to Panama City, spent the night in James's home, and embarked for Contadora Island the next day. From there we would proceed to other less developed areas.

*Barging In*

After we deplaned in Contadora, we admired the lavish resort buildings, mansions, shops, and pools, as we made our way down to the beach and the vessel that would take us to our shelling venue. We looked out over the water. There were a number of yachts and a huge barge. Which boat would be ours? A dinghy was motoring into shore to take us to our home for the next 5 days - the barge! This was an old World War II amphibious vessel for unloading tanks on shore, with a huge metal platform that could be lowered and raised in order to launch smaller boats. "Now I've seen everything," I thought and mused that in just two days I'd gone from my house in Pittsburgh to a 50-year-old barge in the Pacific Ocean. With the help of the crew, we soon hoisted our bags onto the barge and claimed bunks in the tiny bunkroom. As lunch was served in the similarly minuscule galley off the bunkroom, we could tell everybody was going to love life on this barge and enjoy this new adventure.

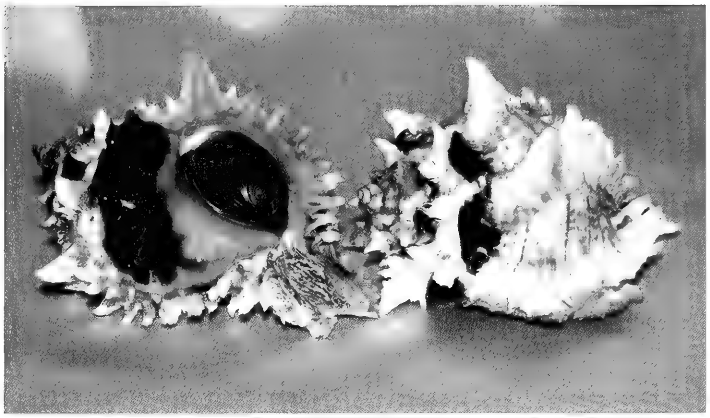
After chugging across the water for several hours, we anchored off Pedro Gonzales Island. On one end was a little settlement, on the other, a rocky beach. Close to Pedro Gonzales was another small uninhabited island with a rocky shore, and this was to be the site for hours of productive collecting.

We kept our snorkeling equipment down on the loading platform and could prop our clothing up on various metal protuberances to dry. Altogether wonderful! With such an exceptionally compatible and flexible group of people, the knowledgeable and colorful James Ernest and Charlotte's steadying and creative leadership, the ingredients were in place for an extraordinary experience.

*Baby, It's Cold*

The on-shore shelling on this trip was absolutely dependent on the tides. Shelling areas were only accessible at low tide, and, while this area wasn't the Bay of Fundy, this was a time of minus low tides and a huge amount of water moved in and out. When it was

low, we could walk between the two islands on a flat but needed to watch carefully, since when it turned we could be wading in knee-deep water in seconds. When the tide was high we stayed on the boat, eating, chatting, playing shell and tell, showing each other our finds, wrapping or pickling our shells, and reading.



***Hexaplex regius*** **(Swainson, 1821) found high and dry on rocks well above the water line. Although not uncommon, its bright colors and delicate sculpturing make this a worthwhile find.**

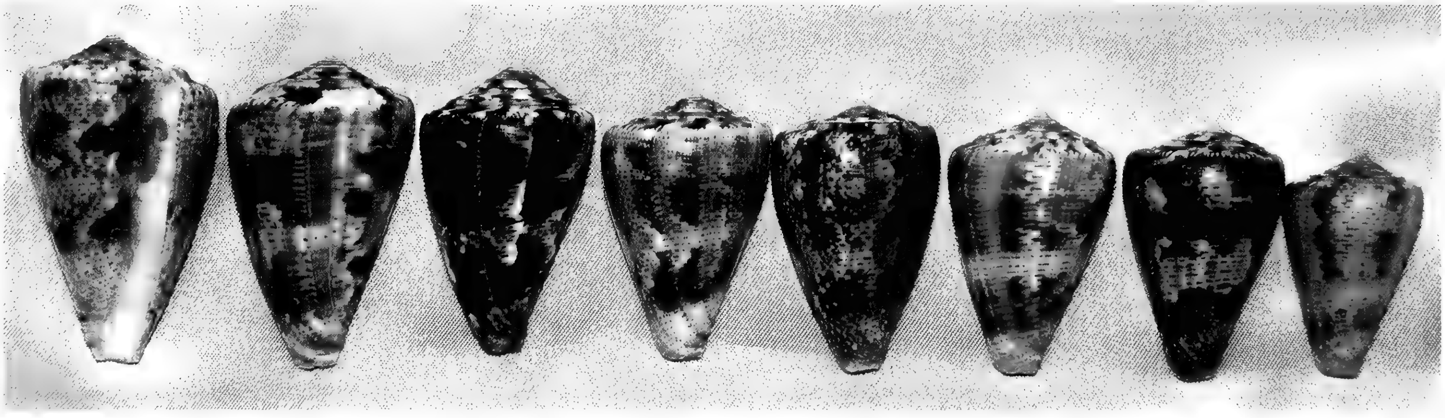
When we arrived on the first afternoon, it was high tide, but we couldn't wait until it went down to get started. So the crew ferried us over to the shore, which was absolutely littered with gorgeous pink scallop-like bivalves - all halves, however. We plunged into the water to snorkel and were in for an awakening. The water was **cold**! We soon exited and decided to save ourselves for the evening's low tide. About 10:00PM we were on our way back to the island where we could see lights winking in the dark and wide stretches of rock and boulder laden 'beach.' Shelling began in earnest. I soon learned that the rocks to be turned were not those deceptive slabs in the Bahamas where you can turn one as large as yourself over and back in two Amazonian heaves. Rather, they were dense and **heavy**. You'd have to ground yourself with both feet and use both hands to dislodge a rock as large as say, a quart pot. To further help the collecting, members of the barge crew would accompany us, point out shells, and hand us shells they found.

The good news was that great shells could be found under almost all of these rocks: a cowrie, a cone, a murex, a latirus, or an interesting bivalve. The other good news was that as the tide went out, sand patches and flats would emerge, much easier on the feet and containing different species.

Turning the rocks, we soon began to find various treasures. We found the "signature" shells for the area: the black spined *Muricanthus radix* (Gmelin, 1791), the beautiful and large *Hexaplex regius* (Swainson, 1821) with its dark brown aperture and pink lined spines, and the brown and white striped "tooth shell" *Opeatostoma pseudodon* (Burrow, 1815) with its long apertural tooth. Cone aficionados weren't disappointed. In the mud near rocks were *Conus purpurascens* G. B. Sowerby I, 1833; *Conus nux* Broderip, 1833; *Conus brunneus* Wood, 1828; *Conus gladiator* Broderip, 1833; *Conus princeps* Linnaeus, 1758; and rarely, *Conus dalli* Stearns, 1873. Here and there were fine pairs of pearl oyster shells for which the Perlas Islands were named, *Pinctada mazatlanica* (Hanley, 1856). We also found sharply ridged *Latirus candelabrum* (Reeve, 1847) and *Latirus mediamericanus* Hertlein & Strong, 1951 with their brown periostracums. It was so exciting not knowing what shell would be under the next rock.

The shells we collected were exotic as well as beautiful, even if some species were common. As I often say, a shell may be easy to obtain in a certain spot, the only thing is that you need is to get to where they are, not always an easy enterprise! An example is *Jenneria pustulata* (Lightfoot, 1786), an unusual and stunning shell with bright red pustules on its dorsum. They live deep at the base of live coral, which is about the same color as the shell. We each brought at least a dozen specimens home. Then there was the beautiful and common little cowrie, *Pseudozonaria robertsi* (Hidalgo, 1906), with brown and orange markings. We found them under the rocks and there was something about this shell that said, "take me" - it was hard to resist. Finally Charlotte had to put her foot down, tactfully emphasizing to our helpers, "No more *robertsi*!"

Just as many or more shells that we found were rare under any circumstances. Take, for example, *Purpurellus pinniger* (Broderip, 1833) "a coveted prize of collectors" according to tropical West America shell authority Myra Keen. Never in my dreams did I expect to find these beautiful gems. These little devils bury themselves at the intersection of a rock and the gray muck substrate, so they are completely camouflaged. James showed us how to look for them and each of us was able to come home with at least



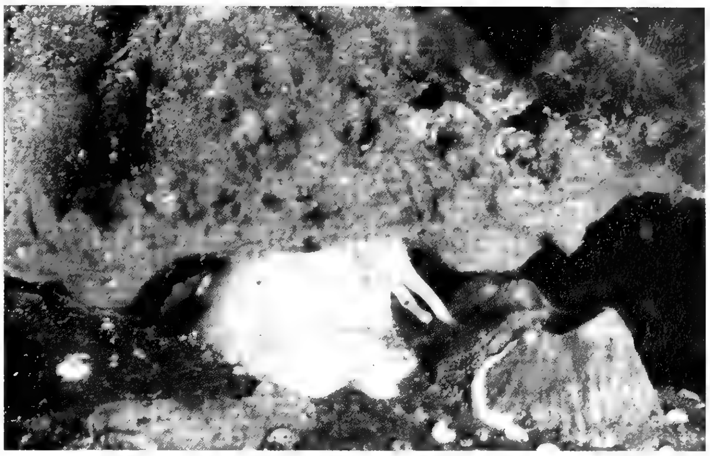
**Color range of *Conus purpurascens* Sowerby, 1833. The colors were just as intense on the larger cones as on the smaller cones.**

one or two specimens. The secret was to sit quietly on a rock and study the mud/sand at the base, looking for a 1mm siphonal canal showing, or any slight disturbance on the mud such as cracks or humps. It took lots of patience.

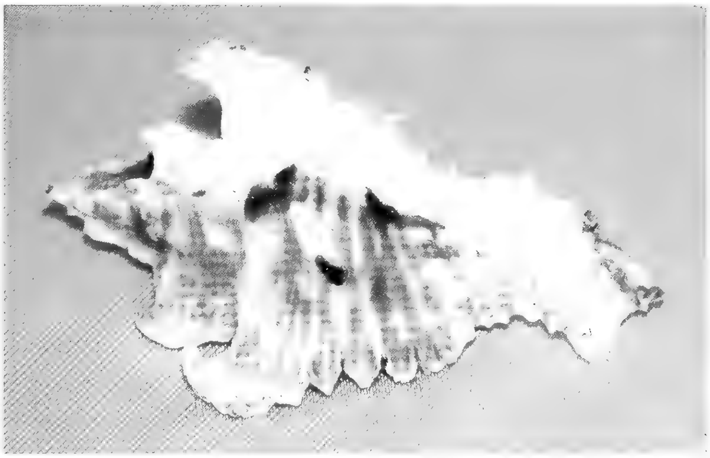
One night on a flat, we hadn't found much until suddenly Gail called out. She had found a huge *Terebra strigata* G. B. Sowerby I, 1825. I got that "have to find one myself" edgy feeling we all know, and about a half hour later was able to add one to my collecting bag. I could never recall finding such an exotic and handsome shell, cream with brown wavy striping.

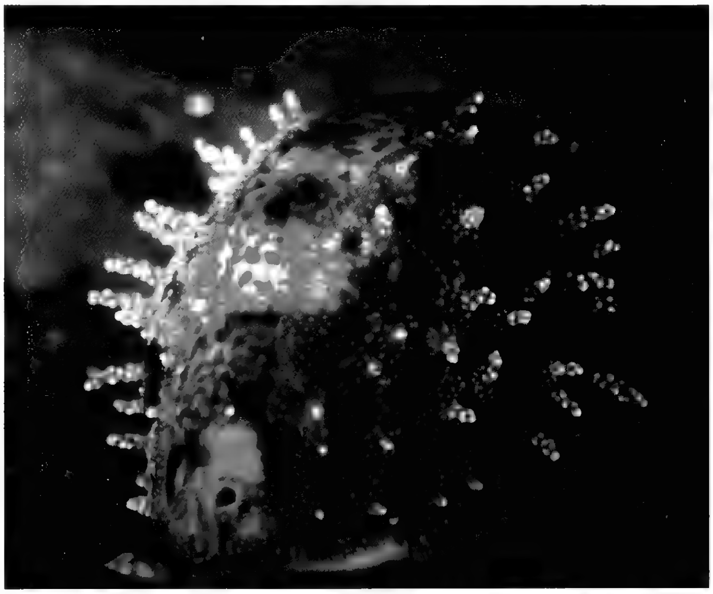
When the tide was way down, we could turn our attention to the exposed sand flats. Naturally everybody wanted to find a tent olive, *Oliva porphyria.* Three of us got lucky with a self-collected specimen, but since the natives brought some to us, everybody went home with two or more specimens of this famous shell. There were also *Strombus* species, *Strombus gracilior* G. B. Sowerby I, 1825, and *Strombus granulatus* Swainson, 1822. Some may think cerithiums are "ho hum", but the white highly sculptured specimens of ceriths on the flats were most appealing

One day we traveled in the launch 10 miles south to an absolutely deserted area and pulled up on an island flat. The word was out that *Oliva porphyria* (Linnaeus, 1758) had been found here. We piled out of the boat and before we knew it, one of the crew brought in a pair of the rare *Oliva splendidula* G. B. Sowerby I, 1825. That energized us all, and we tracked back and forth on the flat and in the shallows looking for telltale perturbations in the sand. A happy Ron got lucky finding an *O. porphyria,* as did I, and Jimmy James and Charlotte found *O. splendidula.* Many of the beautiful little *Oliva undatella* Lamarck, 1810, were found on the sandbars. The purchases from the natives further added variety to our olive collections. There were *Oliva polpasta* Duclos, 1833, and the variably colored *Oliva incrassata* (Lightfoot, 1786).

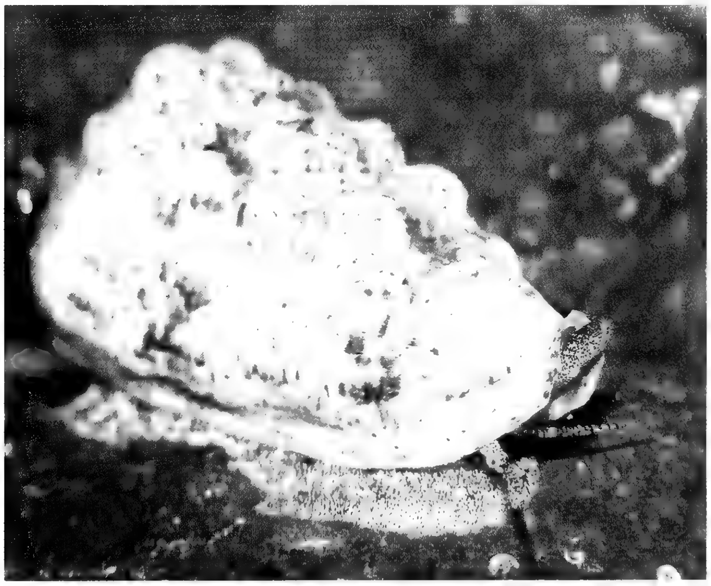


**Above: *Purpurellus pinniger* (Broderip, 1833), showing the bright white live animal and the hardly recognizable shell. Below: Same shell cleaned up.**





**The very common *Pseudozonaria robertsi* (Hidalgo, 1906). This striking shell is commonly found under rocks. The living animal's appearance with the extended mantle is quite different from the typically seen dried and cleaned shell.**



**The diminutive (25mm) *Morum tuberculosum* (Reeve, 1842) showing its beautiful blue and yellow spotted body. This shell is found from Baja to Peru.**

*Oliva porphyria* (Linnaeus, 1758) on the left meets *Oliva splendidula* Sowerby, 1825 on the right. Both are colorful olives, but the tent olive (*O. porphyria*) is certainly the more sought after of the two for both its vivid pattern and large size (over 120mm).

**The shell lottery aboard the barge; a nightly dividing of spoils. On the table is the coveted grinning tun, *Malea pomum* (Linnaeus, 1758); the uncommon giant Pacific conch, *Strombus galeatus* Swainson, 1823; a brightly colored and winged *Strombus peruvianus* Swainson, 1823; various bivalves and murex; and a plate full of *Pseudozonaria robertsi.* Participants are, left to right: Ron Nixon, Karen VanderVen, Jim Knight, and Clair Beckman.**

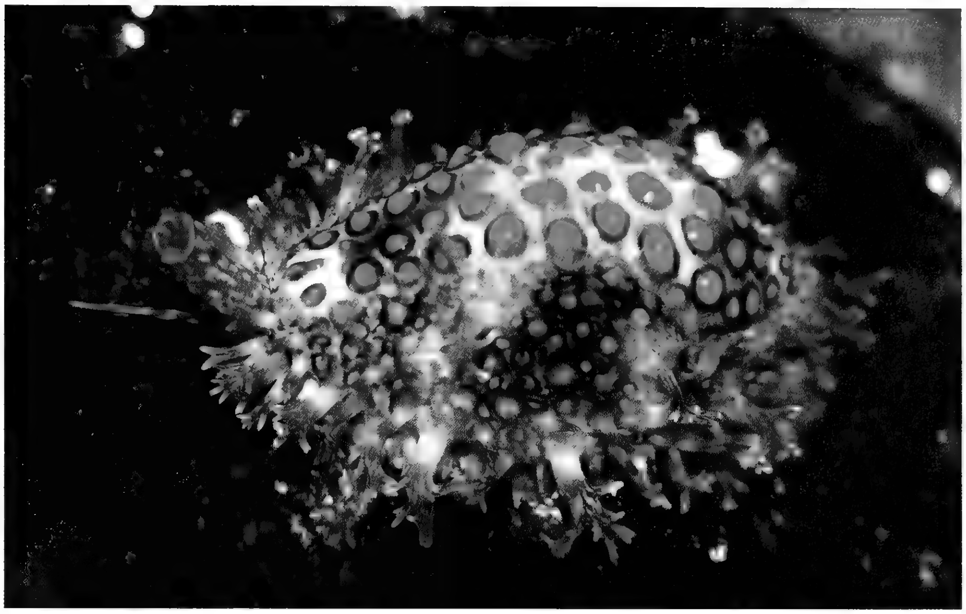
*Dredging Up Old Memories*

Each day two of us could accompany James in the 24-foot launch on a dredging operation. So Clair and I set off with him one afternoon. When we came to a spot James thought might be promising, he'd slow down, and the crew would lower the dredge from a winch. We'd slowly cruise along with the dredge biting into the bottom. Finally, the winch would creak and groan as the crew raised the dredge and we'd gaze eagerly to see what surprises it contained. The take would be spread on the back deck. We eagerly but systematically pawed through the dredgings to separate the shells from the bottom grunge. We weren't often disappointed. There were cones such as *Conus archon* Broderip, 1833, and *Conus orion* Broderip, 1833; and the spotted terebra, *Terebra ornata* Gray, 1834. There were unusual bivalves and a wealth of tiny 10-25mm shells. Some of the great finds included *Typhisala grandis* (A. Adams, 1855), both the white and chocolate varieties; *Typhisopsis clarki* (Keen & Campbell, 1964); *Phyllocoma scalariformis* (Broderip, 1833); *Favartia incisa* (Broderip, 1833); *Aspella pyramidalis* (Broderip, 1833); and *Trigonostoma elegantulum* M. Smith, 1947.

*The Lottery*

On the second afternoon, after we had taken advantage of the morning's low tide, we happened to glance over towards the small village to our left. We had been noticed and the word was out. A

flotilla of small craft was approaching, looking like the natives paddling out to meet Christopher Columbus. When the dozen boats arrived at the base of the barge's entry deck, there were men, women, and children bearing **shells,** hundreds of them. Some species we'd already found, other species we hadn't. While we gaped and gawked over them, James and Charlotte took charge, negotiating a purchase and selecting the shells. Then the challenge was to figure out how they'd be divvied, but no problem. After dinner there would be the 'Great Shell Lottery' orchestrated by Charlotte. Here's how it worked. She would sort the shells into separate piles according to species. One-of-a kinds and large shells were temptingly displayed on the galley table. We all drooled over a gorgeous "grinning tun" *Malea ringens* (Swainson, 1822) and a winged *Strombus peruvianus* Swainson, 1823. We'd each point out the shells we hoped we'd get. Each night a hatful of numbers from one to six would be prepared, put in a cap, and we'd draw. Number one got the first pick. Number six got the last, but got to start off the next round. While our self-collected finds were abundant, adding these shells to them was a great enhancement. Some evenings there were so many shells that the "draw" would take hours. This shell lottery was just one of the many highlights of the trip, showing the best of the shell collector spirit and generosity. There was a **huge** orange *Conus princeps* that I just **had** to have, and everybody knew it. Jimmy James wanted the winged stromb. One cone became known as "Karen's cone" and nobody took it or the stromb until my and Jimmy James's respective numbers were up. One evening the purchased shells were so abundant that it would have taken days for us to select them one by one. So Charlotte divided them into lots, and we might get 10 fine shells in one round!



***Jenneria pustulata* (Lightfoot, 1786), Jenner's cowry or the pustulate trivia. This species, known for its striking colors and sculpture, is relatively common in shallow waters from Baja to Ecuador.**

Also enhancing our out-of-water time was Charlotte's live-shell display. She brought slabs of glass and glass cement along in her bag, and had soon put together a real aquarium. We enjoyed seeing what different species would do and what the colorful animals looked like when fully extended (see accompanying photographs).

*The Layered Look*

We had all anticipated tropical temperatures and brought clothing accordingly. At times, especially at night, the air, like the water, was cold. So we became masters of the layered look. Seeing us asleep in our bunks one would note we were wearing sweatshirts, socks, even hats, and topping off our single sheet with rain parkas, towels and dry dive suits.

Daniel, a tall and handsome Panamanian cook, prepared our meals. Although he couldn't communicate with a common language (due to my lack of Spanish proficiency), we communicated very well through the universal language of food. He soon knew I **had** to have my morning coffee, and as soon as I peeked around the corner of the galley, out would come the coffee, water, a cup, and the milk. About halfway through the trip Charlotte taught Daniel how to make grilled ham and cheese sandwiches.

We all have our favorites from the trip, and I have to cite my self-collected *Conus princeps apogrammatus* Dall, 1910, with its uncustomary fine axial streaks. Another was a dwarf *Macrocypraea cervinetta* (Kiener, 1843). I enjoyed the interesting *Columbella.* I usually bypass "cup and saucer" shells, but the beauty and availability of *Crucibulum* species here encouraged the collecting of a variety of large and perfect specimens. Certainly, as is true of all shell trips, this was about the shells, but it was about a lot more as well.

To end the trip, the crew captained the barge back to Panama City, and we flew back. James and his wife Gladys graciously hosted us in their home for a day, where we enjoyed viewing many specimens from his collection and watching while his staff cleaned our largest shells so we would have them ready to take home with us. We flew home the next day with great memories and our bags packed full of wonderful shells.

**Species list:**

*Arca pacifica* (G. B. Sowerby I, 1833)
*Barbatia rostae* Berry, 1954
*Anadara multicostata* (G. B. Sowerby I, 1833)
*Glycymeris maculata* (Broderip, 1832)
*Glycymeris strigilata* (G. B. Sowerby I, 1833)
*Modiolus capax* (Conrad, 1837)
*Pinctada mazatlantica* (Hanley, 1856)
*Ostrea fisheri* Dall, 1914
*Pecten perulus* Olsson, 1961
*Spondylus princeps* Broderip, 1833

*Eucrassatella gibbosa* (G. B. Sowerby I, 1833)
*Cardita affinis* G. B. Sowerby I, 1833
*Cardita crassicostata* (G. B. Sowerby I, 1825)
*Papyridea aspersa* (G. B. Sowerby I, 1833)
*Periglypta multicostata* (G. B. Sowerby I, 1833)
*Megapitaria aurantiaca* (G. B. Sowerby I, 1831)
*Chione tumens* (A. E. Verrill, 1870)
*Chione pulicaria* (Broderip, 1835)
*Tagelus politus* (Carpenter, 1857)
*Lucapinella aequalis* (G. B. Sowerby I, 1835)
*Fissurella asperella* G. B. Sowerby I, 1835
*Tegula pellisserpentis* (Wood, 1828)
*Nerita scabricosta* Lamarck, 1822
*Littorina aspera* Philippi, 1846
*Architectonica nobilis* Röding, 1798
*Turritella gonostoma* Valenciennes, 1832
*Turritella radula* Kiener, 1843
*Vermicularia frisbeyae* McLean, 1970
*Cerithium stercusmuscarium* Valenciennes, 1833
*Bittum panamense* Bartsch, 1911
*Strombus galeatus* Swainson, 1823
*Strombus gracilior* G. B. Sowerby I, 1825
*Strombus granulatus* Swainson, 1822
*Strombus peruvianus* Swainson, 1823
*Crepidula onyx* G. B. Sowerby I, 1824
*Credidula aculeata* (Gmelin, 1791)
*Crucibulum spinosum* (G. B. Sowerby I, 1824)
*Crucibulum pectinatum* Carpenter, 1856
*Crucibulum scutellatum* (Wood, 1828)
*Crucibulum umbrella* (Deshayes, 1830)
*Natica grayi* Philippi, 1852
*Polinices uber* (Valenciennes, 1832)
*Sinum noyesii* Dall, 1903
*Trivia pacifica* (G. B. Sowerby I, 1832 *ex* Gray ms)
*Erosaria albuginosa* (Gray, 1825)
*Macrocypraea cervinetta* (Kiener, 1843)
*Pseudozonaria arabicula* (Lamarck, 1811)
*Pseudozonaria robertsi* (Hidalgo, 1906)
*Simnia aequalis* (G. B. Sowerby I, 1832)
*Jenneria pustulata* (Lightfoot, 1786)
*Malea ringens* (Swainson, 1822)
*Cymatium wiegmanni* (Anton, 1839)
*Cymatium gibbosum* (Broderip, 1833)
*Morum tuberculosum* (Reeve 1842 ex Sowerby, MS)
*Bursa caelata* (Broderip, 1833)
*Hexaplex regius* (Swainson, 1821)
*Homalocantha multicrispata* (Broderip, 1833)
*Murexiella lappa* (Broderip, 1833)
*Murexiella vittata* (Broderip, 1833)
*Muricanthus radix* (Gmelin, 1791)
*Muricanthus princeps* (Broderip, 1833)
*Muricopis zeteki* Hertlein & Strong, 1951
*Purpurellus pinniger* (Broderip, 1833)
*Aspella pyramidalis* (Broderip, 1833)
*Favartia incisa* (Broderip, 1833)
*Vitularia salebrosa* (King & Broderip, 1832)
*Typhisala grandis* (A. Adams, 1855)
*Typhisopsis clarki* (Keen & Campbell, 1964)
*Thais triangularis* (Blainville, 1832)
*Cymia tecta* (Wood, 1828)
*Neorapana muricata* (Broderip, 1832)
*Cantharus ringens* (Reeve, 1846)
*Cantharus vibex* (Broderip, 1833)
*Columbella major* G. B. Sowerby I, 1832
*Columbella strombiformis* Lamarck, 1822
*Aesopus eurytoides* (Carpenter, 1864)
*Anachis lyrata* (G. B. Sowerby I, 1832)
*Strombina gibberula* (G. B. Sowerby I, 1832)
*Nassarius corpulentus* (C. B. Adams, 1852)
*Nassarius luteostoma* (Broderip & G. B. Sowerby I, 1829)
*Latirus mediamericanus* Hertlein & Strong, 1951
*Leucozonia certa* (Wood, 1828)
*Opeatostoma pseudodon* (Burrow, 1815)
*Enaeta barnesii* (Gray, 1825)
*Oliva incrassata* (Lightfoot, 1786)
*Oliva polpasta* Duclos, 1833
*Oliva porphyria* (Linnaeus, 1758)
*Oliva spendidula* G. B. Sowerby I, 1825
*Olivella volutella* (Lamarck, 1811)
*Vasum caestus* (Broderip, 1833)
*Prunum sapotilla* (Hinds, 1844)
*Mitra lens* Wood, 1828
*Cancellaria solida* G. B. Sowerby I, 1832
*Conus brunneus* Wood, 1828
*Conus purpurascens* G. B. Sowerby I, 1833
*Conus gladiator* Broderip, 1833
*Conus princeps* Linnaeus, 1758
*Conus princeps apogrammatus* Dall, 1910
*Conus vittatus* Hwass in Bruguière, 1792
*Conus nux* Broderip, 1833
*Conus orion* Broderip, 1833
*Conus dalli* Stearns, 1873
*Terebra strigata* G. B. Sowerby I, 1825
*Terebra variegata* Gray, 1834
*Terebra robusta* Hinds, 1844
*Terebra ornata* Gray, 1834
*Crassispira rustica* (G. B. Sowerby I, 1834)
*Crassispira tepocana* Dall, 1919
*Zonulispira grandimaculata* (C. B. Adams, 1852)
*Bulla punctulata* A. Adams in G. B. Sowerby II, 1850
*Heterosiphonaria gigas* G. B. Sowerby I, 1825

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# Recent Changes in Texas Shell-Bearing Mollusk and Intertidal Organism Harvest Regulations

**By Randy Blankinship**

The harvest of live shell-bearing mollusks or crustaceans and other shallow water and intertidal organisms such as sea urchins and starfish has long been practiced along Texas coastal areas. Many people harvest these organisms for commerce, food, decoration, crafts, trade, and collections. Such activity is an important part of the coastal experience. New regulations passed in April 2005 by the Texas Parks & Wildlife Commission may affect people participating in this fishery.

The new regulations were developed due to concerns about the vulnerability of certain shell-bearing mollusks and other intertidal species to over-harvesting. Most of these species share characteristics that make them susceptible to high harvest rates, such as:

- Slow movement that prevents migration over a long distance and may limit genetic mixing during reproduction.
- Localized spawning and relatively limited distribution of progeny.
- Spawning in shallow water that may expose large females to harvest. Large organisms such as these are often the most desirable.
- Spawning aggregations in areas easily accessed by harvesters.

A distinction exists between the harvest of shell-bearing organisms and picking up a dead shell, because the organisms that either makes the shell or lives in the shell is taken or removed from the population in the former activity. Taking of a marine organism or its body part(s) in this way is a type of harvest. A fishing license and saltwater fishing stamp endorsement is, and has been, required to take any aquatic life in the public coastal waters of Texas for recreational purposes.

The new regulations, which went into effect September 1, 2005, are:

- Daily aggregate bag limit of 15 living univalve snails (all species) to include no more than two of each of the following species: lightning whelk, horse conch, Florida fighting conch, pear whelk, banded tulip, and Florida rocksnail.
- Creation of a closed area from November 1 – April 30 of the following year to the taking of live, shell-bearing mollusks (or their shells), starfish, or sea urchins within an area bounded by the bay and pass sides of South Padre Island from the east end of the north jetty at Brazos Santiago Pass to the west end of West Marisol Drive in the town of South Padre Island, out 1,000 yards from the mean high-tide line, and bounded to the south by the centerline of the Brazos Santiago Pass.

During public scoping meetings and hearings for the development of these regulations, the Texas Parks & Wildlife Department received many comments with over 90% of them being in favor of the measures. It is also noteworthy that the South Padre Island/ Port Isabel Shell Collecting Club realized the need for these measures and endorsed them. With such support from local citizens and the new fishery management measures in place, the continued sustainability of this resource looks good for the future.

For more information, please go to www.tpwd.state.tx.us or call 956-350-4490.

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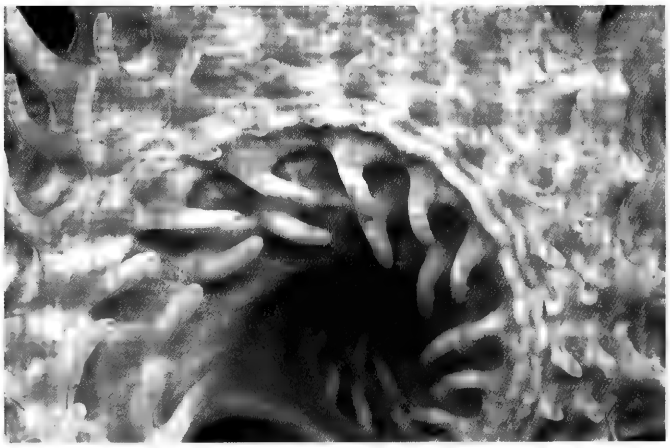
**956-350-4490**



**What Shell Is This?**

**For the answer, take a look at the back cover.**


**Conchologists of America, Inc.**
**2006 Convention**
**Mobile, Alabama**
**May 30 – June 4, 2006**

Hurricane Katrina hit us hard this year and the aftermath has slowed us down in our convention preparations, but we are still working toward the big day. The theme of the 2006 convention is "Sea Treasure." This commemorates the publishing of the classic book of the same title by Alabama's most famous conchologist, the late Kathleen Yerger Johnstone of Mobile. The logo for the convention, so skillfully designed by Sanibel's own Kim Nealon, depicts the pirate Captain Jean Lafitte on the Alabama coast with his treasure chest full of our favorite sea treasures – seashells. The shells depicted are all native to the waters off Alabama

The convention will be held at the Riverview Plaza (soon to be called the Marriott Renaissance) in downtown Mobile (the tall building with all of the windows lit). Field trips are planned for the day prior to the opening of the convention. Field trips include shallow water marine, freshwater, and fossil collecting trips; a diving trip off the Alabama coast; and trips for non-shellers.

Also featured in this convention will be a shell show hosted by supersheller Gene Everson.


**MOBILE 2006 SHELL SHOW**

Six exhibit categories with titles beginning with the letters comprising the spelling of Mobile, such as family, genus, species, common name, etc. Entries may be full exhibits or single shells.

**M** For example: Muricidae, *Muricopsis*, Miters, *Marginella*, Miniatures, Moon Shells, Mussels, My Favorite Shells.

**O** For example: Olives, Ovulidae, Oysters, *Ocenebra*, *Oocorys*, Oh My, Old favorites, Orange Shells.

**B** For example: Bursidae, *Babylonia*, Baler Shells, Bivalves, Bleeding Teeth, Bonnets, Bubble Shells, Buccinidae, Big Shells.

**I** For example: Isognomonidae, *Isocardia*, *Ischnochiton*, *Imperialis* – one species of cones, Imperfect Shells (repairs and/or freaks).

**L** For example: Land Snails, *Latiaxis*, *Latirus*, Lightning Whelks, Limpets, Lion's Paws, Limidae, Littorinidae, Little Shells.

**E** For example: Epitoniidae, *Epitonium*, *Ericusa, Eucrassatella, Eudolium, Excellichlamys*, Exceptional Shells, Extra Big Shells, Easy To Collect Shells (beachcombing).

We hope you will join us in Mobile for what we hope will be the best COA convention ever. Registration forms are included with this issue or may be accessed on the COA website.

# Sanibel Island Shell Museum Celebrates First Decade

## by Libby Grimm

*"'Good morning and welcome to the official opening of The Bailey-Matthews Shell Museum."*

**Those were the words that at one time or another over the preceding nine years some of us on the board thought might never be spoken. But on this sunny, warm November 18, 1995, here was board president Harold Tovell welcoming some 300 guests attending the Grand Opening ceremonies in the parking area's circle.'**

*-From "An Informal History of The Bailey-Matthews Shell Museum"*

*By William F. Hallstead*

Fast forward ten years since the penning of those words by author and former Museum board president Bill Hallstead: on Saturday, Nov. 19, 2005, the Museum celebrated the start of its second decade with a daytime open house for the public and an invitation-only evening reception for members and friends.

Museum director Dr. José H. Leal was pleased to have as guest of honor at the open house and reception, University of California-Davis Distinguished Professor of Geology Dr. Geerat J. Vermeij. Dr. Vermeij is a 1992 MacArthur "Genius" Award recipient and specializes in marine ecology, paleoecology, and the functional morphology of marine mollusks.

UC-Davis News Services explains that Dr. Vermeij, "blind since the age of three, uses his sense of touch to study the shape and surface features of shells. That work has led him to insights into evolution, ecology, biology, and most recently, economics. In 2004, he was named a faculty research lecturer in recognition of his exceptional contributions to research. This is the highest honor bestowed by UC-Davis faculty members on their peers."

His wife, Edith Zipser Vermeij, who is his research collaborator, accompanied Dr. Vermeij. He gave a talk during the afternoon of the open house and was then available to sign museum store copies of his book, *A Natural History of Shells*. Dr. Vermeij also spoke at the evening reception and kindly agreed to another round of book signing.

Dr. Vermeij appeared on National Public Radio's *Morning Edition* on May 25, 2005, to explain his new theory that biological observations from his fossil studies can apply as well to human endeavors.

**The "Shell of the Moment" at the museum is a world-record size lightning whelk (40.2cm). It was collected in 1993 by a scallop boat at a depth of 37 meters off Carrabelle in the Florida Panhandle and donated to the museum by Al and Bev Deynzer of Sanibel Island.**

**A life-size diorama of a mangrove mudflat is one of the museum displays. The display includes examples of many common Florida mollusks and, almost hidden behind the mangrove roots, is a raccoon looking over his dinner for the evening.**

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 34, No. 1** **March 2006**


In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***



**Visit the COA website: http://conchologistsofamerica.org. Subscribe to Conch-L, the COA listserver at: listserv@listserv.uga.edu instructions on the COA web site.**

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**Front cover: Live *Cypraea cribraria* Linnaeus, 1758, with extended mantle. Photo taken at night in 40 feet of water, on black sand and rubble slope, Sulawesi, Indonesia. Photograph by Charles E. Rawlings.**

**Back cover: "Spiral No. 2, Neritina Gagates," (*Vittina waigiensis*). Painting by Steven Counsell. See the related story on page 35.**

# *Gyroscala xenicima* (Melvill & Standen, 1903) (Gastropoda: Epitoniidae) found in Texas.

by

**Emilio Fabián García**

About two years ago I published a paper in American Conchologist (2003: 21-25) on the status and distribution of the western Atlantic epitoniid taxon *Gyroscola turnerae* (Altena, 1971). My objective in that paper was to prove that *G. turnerae* was a junior synonym of the Indo-Pacific species *Gyroscala xenicima* (Melvill & Standen, 1903).

One of the points I emphasized, other than the fact that the shells of the two taxa are indistinguishable, was that the geographic distribution of *G.. xenicima* was from Hawaii to South Africa, and that of *G.. turnerae* was from Brazil to southern Florida. I was puzzled, however, by the fact that, if *G. xenicima* was a circumglobal species as I proposed in the paper, why didn't it appear in the Gulf of Mexico fauna?

My personal thought had been, as I stated in the "Introduction" and "Habitat" sections of the paper in question, that specimens of *G.. xenicima* in the Indo-Pacific and *G. turnerae* in the western Atlantic were a rare and cryptic species, usually found when there was some major type of beach restoration, and that sooner or later the species would be found in the Gulf.

Last January, while browsing through the malacological collection at the Houston Museum of Natural History, I found a beach-worn specimen of *G.. xenicima* (=*turnerae*) collected by K. Yeamans in 1971 at Matagorda Beach, 12 miles east of Matagorda, Texas, catalogue No. 41314 (see Fig. 1a). Moreover, as I later tried to uncover more specimens of this elusive species, Fabio Moretzsohn, at the Harte Research Institute, and Noe Barrera, Research Associate at the Center for Coastal Studies, both in Corpus Christi, Texas, brought to my attention a second specimen. This specimen (Fig. 1b) was collected on a Texas beach in 2003 by the well-known and highly respected Texan collector, Roe Davenport. Roe passed away last year and access to his collecting data is not available at this time. Roe thoroughly combed the beaches of south Texas for many years and brought to light a number of interesting assemblages of mollusks from the Texas coast. He is also credited with finding the first specimens of *Cymatium tranquebaricum* (Lamarck, 1816) in the Gulf of Mexico (García, 2001). With his death we have lost an enthusiastic, thorough, and gentle colleague.

Beach-worn specimens of *Gyroscala xenicima* are not especially attractive, and in that condition they can be confused with *Gyroscala rupicola* (Kurtz, 1860), a rather common species on the Gulf coast. It is very probable that other specimens of *G. xenicima* exist, unrecognized in other Texan collections.

My thanks to the Houston Conchology Society for inviting me to Houston, to the Houston Museum of Natural Sciences for allowing me to inspect its holdings, and to Mrs. Lucy Clampit and Mrs. Tina Petway, for being such great hostesses in and out of the Museum.

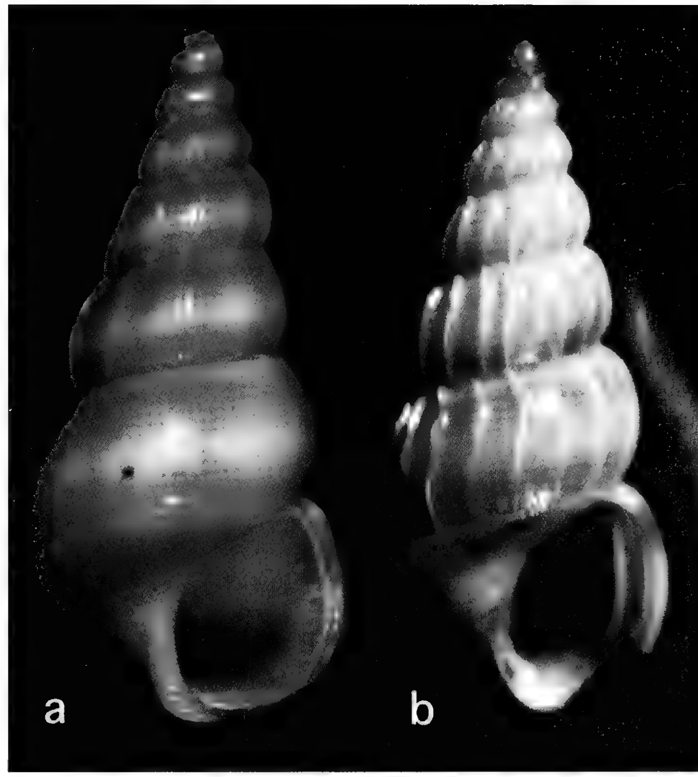


**Fig. 1 *Gyroscala xenicima* (Melvill & Standen, 1903, approx. 8mm, collected from Texas beaches. 1a. was collected east of Matagorda, Texas, by K. Yeamans in 1971. 1b. was collected on an unknown Texas beach by Roe Davenport in 2003.**



REFERENCES

**García, E. F.** 2001. The saga of three ranellid species in the western Atlantic. American Conchologist 29(2):11.

**García, E. F.** 2003. *Gyroscala turnerae* (Altena, 1971) (Gastropoda: Epitoniidae), a western Atlantic junior synonym of the Indo-Pacific *Gyroscala xenicima* (Melvill & Standen, 1903). American Conchologist 31(2): 21-25.

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# Bivalved Gastropods: *Berthelinia* and *Julia* (order Sacoglossa, family Juliidae)

by
**Robert Robertson**

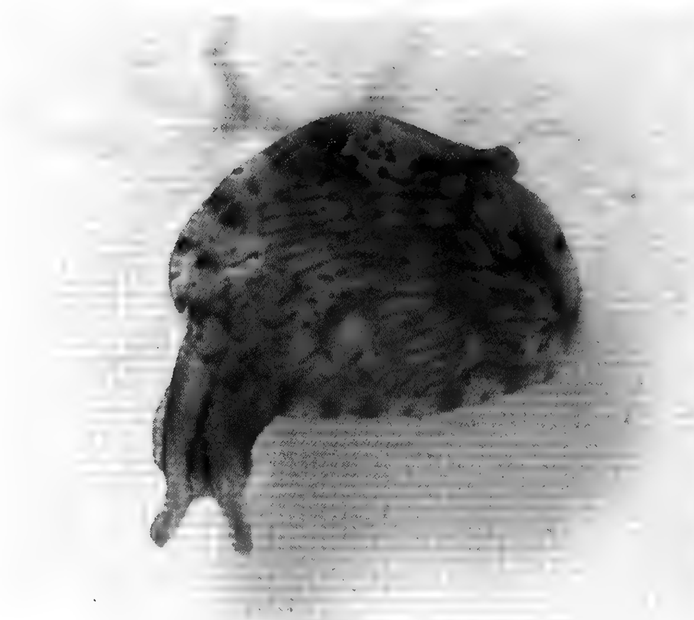
The French conchologist Joseph Charles Hippolyte Crosse named the genus *Berthelinia* in 1875. It is a Paris Basin fossil, Middle Eocene in age (about 65 million years old). He had only a single 0.5mm shell with a few whorls; the early whorls (the protoconch) were tightly coiled and the "aperture" was greatly flared. Crosse likened it to the gastropod genus *Hipponix*, a limpet-like gastropod. His successors soon found it was bi-valved and therefore assumed it was not a snail at all. After numerous vagaries, other scientific names for this species and other similar bivalves were proposed, but the oldest and hence valid name for the genus is still *Berthelinia*.

In 1959, 84 years after the original description by Crosse, the Japanese marine biologist Siro Kawaguti and the opisthobranch expert Kikutaro Baba (1959) saw the animal alive. **Surprise of all surprises, it was a snail, not a clam as formerly (mostly) believed!** *Berthelinia* was soon found alive in Australia (Burn, 1960), the eastern Pacific (Keen & Smith, 1961), Hawaii, the eastern Indian Ocean, and even the Caribbean. *B. caribbea* Edmonds, 1963 is now known from Florida to the offshore islands of Brazil. The moral: "Study nature, not books," as Louis Agassiz wrote on a wall of the museum he founded at Harvard.

Kawaguti and Baba named their animal *Tamanovalva*, a name that was shortly afterwards considered a synonym of *Berthelinia*. This has been disputed, however, as shelled opisthobranch taxonomy has to be based on anatomy. Rather similar shells can contain quite different anatomies that can reveal different relationships. A 65 million year old paleontological history is not unusual for a marine mollusk genus, and there seem to be related younger fossils filling the time hiatus that could have led to the present day, living descendants. Scientific discoveries are rarely absolutely new, and as mentioned earlier, Crosse originally thought *Berthelinia* was a snail. Three other people between 1862 and 1920 mentioned that a single valve of the bivalved animal appeared to be like that of a whole opisthobranch shell.

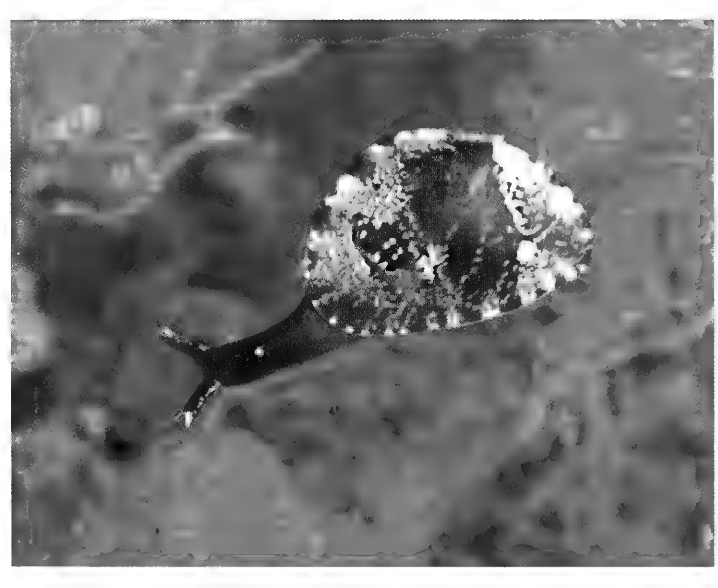
The formation of this bivalved gastropod shell, the adult shell itself, the mantle, the radula, spawning habits, and larval development were then studied and reported in a quick succession of Japanese papers by Kawaguti and several of his colleagues. *Berthelinia* is now fairly well known, compared with most other marine mollusks.

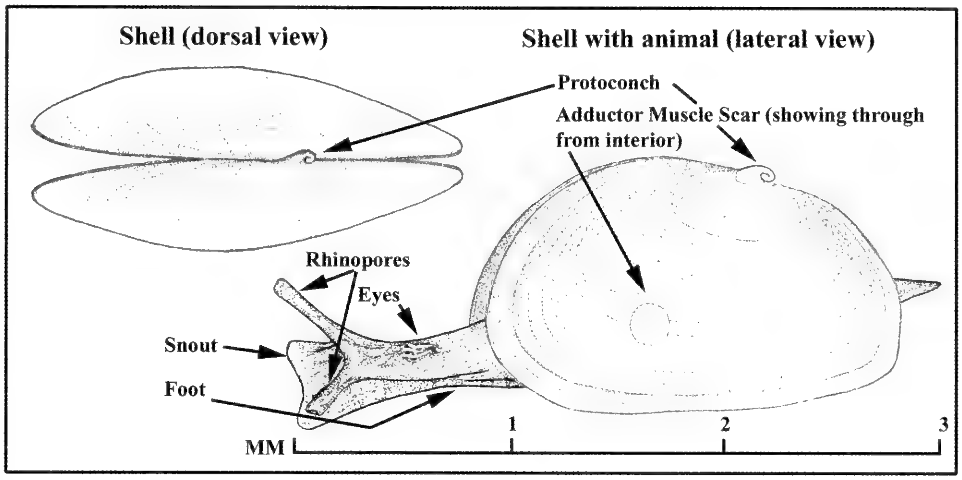
*Berthelinia* has a bivalve shell of up to about 4.5mm in length. In profile the anterior ends of the shell are more inflated than the posterior ends. The entire shell is thin and flexible. A tiny heterostrophically (left-handed) coiled larval shell is retained only on an unabraded left valve, where there are also two semi-longitudinal hinge teeth. On the right valve there is only a single such tooth. These two sets of hinge teeth interlock in a clam-like fashion. On the head of the animal are paired "tentacles" that are rolled longitudinally (rhinophores). Behind these are paired eyes set close together on a median papilla. A radula is present and



**Above: *Berthelinia caribbea* Edmonds, 1963, 3mm, found on *Caulerpa* in shallow water off Grand Bahama Island. Note the small protoconch visible on the left valve. Photo by author.**

**Below: *Berthelinia chloris* (Dall, 1918), approximately 3mm, found on *Caulerpa* in shallow water in the Galapagos Islands. The characteristic rolled sacoglossid rhinophores are covered with white specks. Sacoglossa is a descriptive name (saco = sack, glossa = tongue) for a characteristic buccal cavity sack found in mollusks within this order that collects and retains the animal's discarded radular teeth. Photo by Dave Mulliner (mulliner1@juno.com).**






**Paired shell valves of *Berthelinia limax* (Kawaguti & Baba, 1959) from Tamano Bay, Bisan Seto in the Inland Sea. Note the small protoconch on the left valve and the adductor muscle scar showing through from the inside of the shell. Image adapted from Kawaguti & Baba, 1959, and Kawaguti & Yamasu, 1962.**

consists of a single coiled row of small detachable teeth. These are often saw-like along the outer half. Clearly this is no clam!

With the living animals, Kawaguti and Baba were able to quickly show that *Berthelinia* is an opisthobranch in the order Sacoglossa. It is related to, among other genera, *Oxynoe* and *Lobiger*, both of which have shells as adults; and *Tridachia* and *Elysia*, which have shells only in the larval stages. Loosely, these last two have been called slugs or even "nudibranchs" (naked gills), although nudibranchs in the strict sense are a different, carnivorous group. All sacoglossans are herbivores.

The genus *Julia* Gould, 1862, has similarities with *Berthelinia* in its geological and nomenclatural histories. Judged only by its cordate shell, or only by one valve, it too was considered a clam until Kawaguti and Yamasu (1962) showed it was biologically another bivalved gastropod, related to *Berthelinia*. The two genera are now classified together in the family Juliidae. Protoconch data are about the same, but the remainder of the shell of *Julia* is much thicker than that of *Berthelinia*. The *Julia* shell is porcelaneous and green, rather than thin and transparent as in *Berthelinia*, which reflects only the green color of the animal. Because of the solidity of *Julia* shells, they are much more likely to be found in beach drift. The heavy *Julia* hinge teeth are also different, with a prominent knob on the right valve and a corresponding deep socket to receive this knob on the left valve. The subcentral adductor muscle scar on the shell interior can be nearly round, medially constricted, divided into two, or have several smaller satellite scars.

The bivalved gastropods and many other sacoglossans live with and feed on the green algae *Caulerpa*, common in shallow water in most tropical and subtropical seas. *Berthelinia* and *Julia* have not yet been found in the Mediterranean, but at least one alien *Caulerpa* now thrives there (Meinesz, 1999). *Berthelienia* is not going to solve that problem!

Bivalved gastropods pierce the algal cell walls with a single detached radular tooth, sucking out the internal juices (cytoplasm) for food. Like their plant hosts, these gastropods are predominantly green. In *Berthelinia* this is mainly because the soft parts of the animal are green and are easily visible through the transparent pale yellow to pale yellowish green shell. In *Julia*, the thicker shell is green. The green body colors of these gastropods may be due to chlorophyll in the algal bodies they ingest and sometimes farm within themselves.

Many sacoglossans are famous for retaining single algal intracellular cell bodies (chloroplasts or zooxanthellae) that they obtain from their food, usually *Caulerpa*, in their living bodies. In a slug so equipped, photosynthesis continues in each alien algal body and the whole animal host is thereby partly fed. A similar, second but convergent, process occurs in true nudibranchs, but they take hydroid or other coelenterate stinging capsules (nematocysts) and place these in their skin for defense of their own bodies. Both of these are examples of symbiosis ("living together").

Grahame (1969) found that *Berthelinia caribbea* lives about 100 days and spawns continuously after an age of about 37 days. Eggs are laid in masses of approximately 40 eggs. In the lab, eggs hatched about 15 days after they were spawned. The larval stage is very abbreviated, with freshly hatched veligers able to settle immediately on the next adjacent frond of *Caulerpa* and begin feeding. A *Berthelinia* in the eastern Indian Ocean is fully planktotropic (feeding while planktonic) and lays larger egg masses containing many more, although smaller, eggs.

Early on it was suggested that bivalved gastropods show kinship between the taxonomic classes Gastropoda and Bivalvia. Nonsense! Each of their two shells is evolutionarily convergent with those of true clams. *Berthelinia* and *Julia* are two obscure "twiglets" on the huge snail evolutionary tree. The true clams are on a different, smaller tree that consistently bears only the clams. In a similar vein, one small shell of a clam is not a modified operculum. The same is true of bivalved gastropods. These actually have a tiny operculum, but only in an early larval stage. The presence of a larval operculum is common in gastropods, especially marine species, but is never seen in clams.

The easiest way to collect living sacoglossans (or many other small mollusks) is to fill buckets half-full with *Caulerpa* (or other appropriate algae) and add fresh seawater. With sufficient undisturbed water above the algae, the animals will travel upwards to the water surface or (commonly) to, or slightly above, the waterline on the bucket wall. The desired animals can be removed with a small paintbrush or pipette and placed singly or in small groups for study in small dishes containing fresh seawater.

Redfern (2001) has made new natural history observations on *Berthelinia caribbea* and on the shells of an as yet unnamed *Berthelinia*, both from Abaco, Bahamas. He even published SEM photographs of the tiny protoconchs of each species. To summarize Redfern briefly on *Berthelinia caribbea*: he found it "…quite plentiful on *Caulerpa verticillata* on sea walls, with 15 crawling out of a couple of handfuls of algae on one occasion." This host algae is the same as that found in Jamaica and Florida. His excellent color photos show the extended living animal in ventral and lateral views. It is more colorful than the animal I studied at nearby Grand

*Julia exquisita* **Gould, 1862, 1.5 - 2.3mm, French Polynesia. Photo courtesy of José and Marcus Coltro of Femorale at: www.femorale.com.**

*Julia zebra* **Kawaguti, 1981, 1.5 - 2mm, French Polynesia. Photo courtesy of José and Marcus Coltro of Femorale at: www.femorale.com.**

Bahama. Redfern emphasizes that the mantle covers each shell valve, and that these are therefore "internal." Earlier reports imply that the mantle is always inside the valves and that there may or may not be a periostracum extending beyond the shell edge. The next person with a living animal and a high power dissecting microscope should easily be able to settle this issue.

By profession, Colin Redfern is a musician. His magnificent book shows what a serious, persistent amateur sheller can do. He even treats and illustrates living nudibranchs in color.

**References (highly selected):**

**Burn, R.** 1960. Australian bivalve gastropods, Nature, 187: 44-46. Earlier note: 186: 179.

**Clark, K.B.** 1994. Ascoglossan [= Sacoglossa] mollusks in the Florida Keys: rare marine invertebrates at special risk, Bulleten of Marine Science, 54: 900-916.

**Clark, K.B. & Busacca, M.** 1978. Feeding specificity and chloroplast retention in four tropical Ascoglossa [= Sacoglossa], with a discussion of the extent of chloroplast symbiosis and the evolution of the order, Journal of Molluscan Studies, 44: 272-282.

**Clark, K.B., Jensen, K.R., & Stirts, H.M.** 1990. Survey for functional kleptoplasty among West Atlantic Ascoglossa [= Sacoglossa], Veliger, 33: 339-345.

**Edmunds, M.** 1963. *Berthelinia caribbea* n. sp., a bivalved gastropod from the West Atlantic, Journal of the Linnaean Society of London, Zool., 44: 731-739.

**Grahame, J.** 1969. The biology of *Berthelinia caribbea* Edmunds, Bulliten of Marine Science, 19: 868-879.

**Kawaguti, S.** 1959. Formation of the bivalve shell in a gastropod, Proceedings of the Japan Academy, 35: 607-611.

**Kawaguti, S. & Baba, K.** 1959. A preliminary note on a two-valved sacoglossan gastropod, *Tamanovalva limax*, n. gen., n. sp., from Tamano, Japan, Biology Journal of Okayama University, 5: 177-184.

**Kawaguti, S. & Yamasu, T.** 1962. *Julia japonica* found living as a bivalved gastropod, Proceedings of the Japan Academy, 38: 284-287.

**Kawaguti, S. & Yamasu, T.** 1966. Feeding and spawning habits of a bivalved gastropod, *Julia japonica*, Biology Journal of Okayama University, 12: 1-9.

**Kay, E.A.** 1968. A review of the bivalved gastropods and a discussion of evolution within the Sacoglossa, Symposium of the Zoological Society of London, no. 22: 109-134. [author's note: this is still the best review]

**Keen, A.M. & Smith, A.G.** 1961. West American species of the bivalved gastropod genus *Berthelinia*, Proceedings of the California Academy of Science, (4) 30: 47-66.

**Kempf, S.C. 1984.** Symbiosis between the zooxanthella *Symbiodinium* (=*Gymnodinium*) *microadriaticum* (Freudenthal) and four species of nudibranchs. Biological Bulletin 166: 110-126.

**Meinesz, A.** 1999. Killer algae, University of Chicago, translated from French.

**Redfern, C.** 2001. Bahamian Seashells; a thousand species from Abaco, Bahamas, Bahamianseashells.com, Inc., Boca Raton, FL, See spp. 668 and 669, B&W pl. 71, color pl. 115.

**Rudman, W.B.** 1987. Solar-powered animals; some nudibranchs raise plants inside their bodies and live off the harvest, Natural History, 96(10): 50-53.

**Yamasu, T.** 1969. On the development of the bivalved gastropod, *Tamanovalva limax*, Biology Journal of Okayama University, 15: 37-71.

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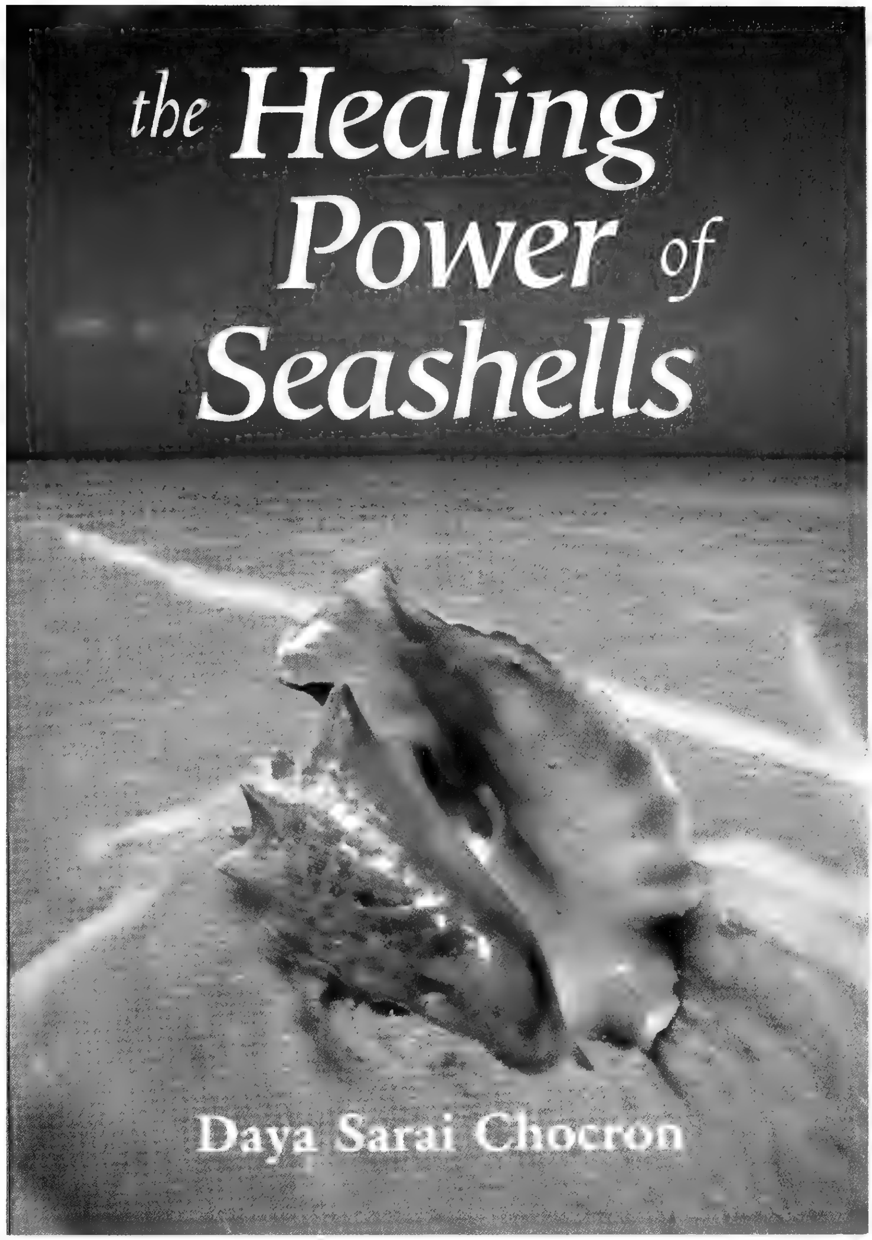
Book Review:

# The Healing Power of Seashells

**Daya Sarai Chocron**




96pp, 60 figs.
Pub. October 2005 by Findhorn Press
www.findhorn@lanternbooks.com
ISBN 184409068X

It's not often you find a book that tells you something entirely new about shells, but here's one that's guaranteed to enhance the knowledge of even the most advanced researcher. To traditional fields such as ecology, systematics, and nomenclature, we can now add, thanks to Ms. Chocron's pioneering work, the study of molluscan energy.

This finely illustrated book sets off with a number of introductory pieces on topics including "the Sacred" and "Shell Dance" before coming to its main thesis, the harnessing of Shell Energy. According to the author, molluscan shells are divided into two main groups. Shells in the first group possess "radiant energy." These are principally bivalves, though in a laudable display of ecumenicism Ms. Chocron includes limpets and corals here as well. The second group contains those shells that manifest "spiral energy," and as you would expect is made up of the gastropods and the nautiluses.

Shells with radiant energy are useful for "releasing blocks and increasing energy flow." I can immediately think of a number of ways in which this will be useful in my daily life, particularly since turning 45. On the other hand, "the spiral tendency," the author informs us, "is the longing for and growth towards wholeness." Spiral energy reportedly acts differently depending on the direction of the spiral, though this aspect is entirely subjective; any shell can be viewed as coiling in either direction, depending on the desired outcome. There are some useful pointers for phylogeneticists here.

This is an unfamiliar field to many, and the publisher has seen fit to warn readers that because "different people react in different ways" they cannot guarantee the "safety of use in individual cases." Experiments with what is clearly a potent force are thus perhaps best performed in groups.

In addition to the fundamental principles of molluscan energy, this book contains a number of interesting facts. Among them are that Hawaiians used cowries against the poison of centipedes and a warning that coral is a species threatened with extinction. Several practical pieces show arrangements of shells laid around the recumbent body that are useful in, among other things, combating headaches, achieving relaxation, and energizing oneself. There are myriad new uses here for odd shells around the house. Ms Chocron also describes and offers for sale a range of "shell essences," about which she invites you to write and ask.

This is clearly not a scientific work, but the idea that shells contain mystical powers granted them by the Cosmic Mother that can heal and stimulate the body and mind seems no farther fetched than a number of other notions concerning nature to which large numbers of otherwise quite coherent people readily subscribe.

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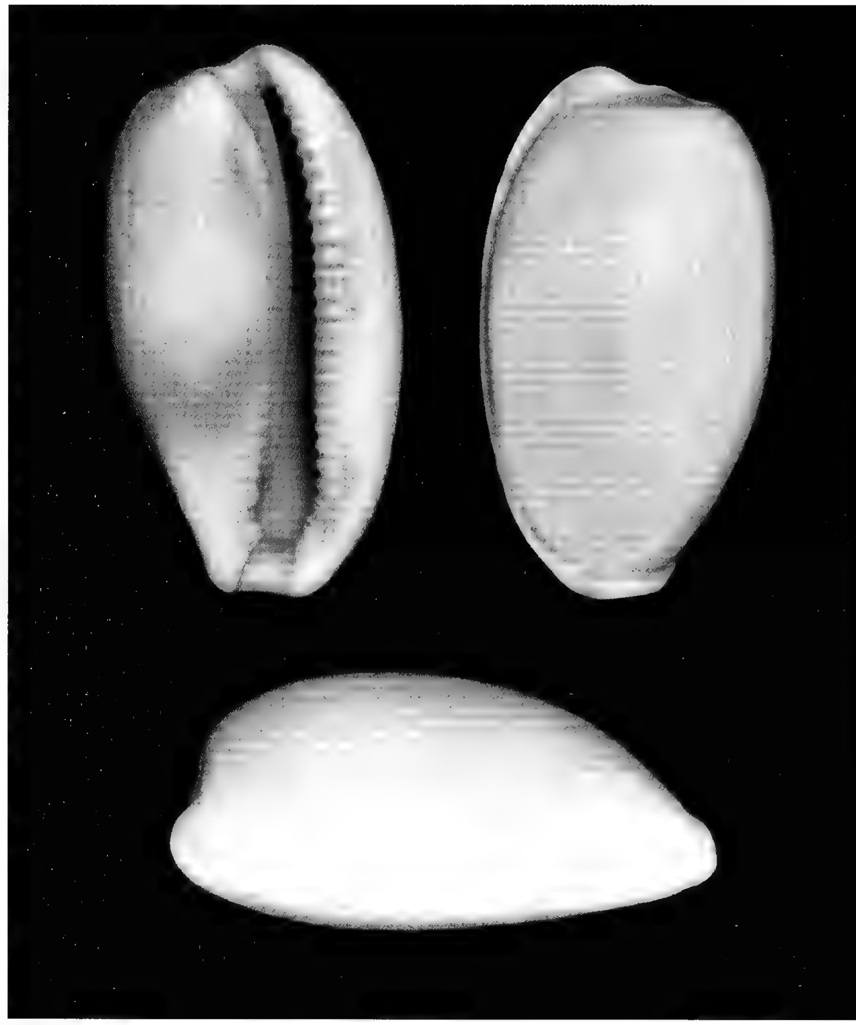
# *Notocypraea*: the *piperita - comptonii* Complex

**by**
**Don Cram**

Shells of the southern Australian genus *Notocypraea* are sought after by collectors in both Australia and worldwide. Some of the forms or varieties of valid species illustrated in shell books, or offered for sale or exchange, bear little resemblance to the original descriptions and type material, but can still command high prices. One of the most misunderstood forms is *Notocypraea wilkinsi* (Griffiths, 1959).

On the 2nd of March 1958, Lt. Col. R.J. Griffiths collected a live specimen of the genus *Notocypraea* under a stone at Flinders (south beach), Victoria. He described it as a new species, *Cypraea (Notocypraea) wilkinsi* in Memoirs of the National Museum, Melbourne, in 1959. The holotype, Reg. No. F19903, and the radula, mounted on a slide in Euparal (a resin based mounting medium), were deposited in that institution along with two of the seven paratypes, designated Reg. No. F19979. Of the rest, there are two in the British Museum of Natural History that I have seen and three others retained by the Griffiths, that may now be in the B.M.N.H. In all of the shell books I have seen, except publications by Barry Wilson, this shell has been incorrectly assigned as a form or synonym of *Notocypraea comptonii* (Gray, 1847).

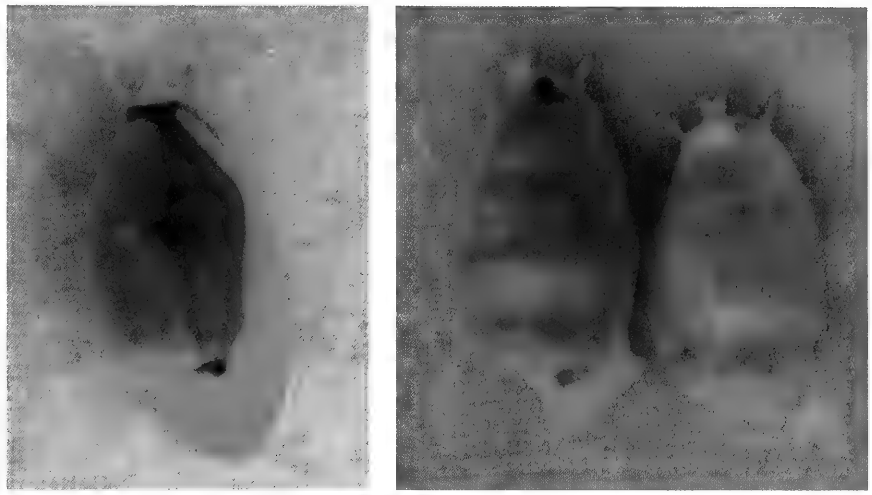


***Notocypraea wilkinsi*** **(Griffiths, 1959), holotype, National Museum, Melbourne, F19903, 24.3mm long x 13.4mm wide x 10.6mm high. Photo Don Cram.**

Griffiths described the shell of the holotype as: "…dorsum bright flesh in colour, sides and ends paler, base tending to be white especially on the columellar side; no dorsal bands. On the labial callus there are about forty very small brown spots, with ten or so more or less in line on the opposite side of the shell." The holotype has faded in time to a creamy white. He described the animal as having pale orange tentacles, darker at the ends, a pale cream almost translucent siphon, a translucent or very pale orange mantle, and a very pale cream foot. The description also contained a line drawing of a half row of the radula teeth. In 1962 Griffiths completed a review of the genus *Notocypraea* in which he described and accepted ten species, figured the central tooth of their radulae, and described the radula of *N. wilkinsi* as similar to *N. piperita* (Gray, 1824). Other than line drawings by M.A. Vayssiere in 1923 of *N. pulicaria* (Reeve, 1846) and *N. declivis* (G.B. Sowerby III, 1870), these are the first published figures of *Notocypraea* radulae.

Of the five generally accepted valid species of *Notocypraea*, three (*N. angustata* (Gmelin, 1791), *N. piperita*, and *N. comptonii*) have distinct and constant radula. The forth species, *N. declivis*, has a radula that is extremely variable. The radula of the fifth species, *N. pulicaria*, differs only slightly from that of *N. piperita*, but this species can be separated fairly easily morphologically. Several writers have disputed this since the publication of the 1962 review. Burgess in both his cowrie books suggested there were only minor radular differences and they were not sufficient for species separation.

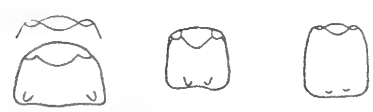
Typical specimens of the two species *N. piperita* and *N. comptonii* occupy approximately the same range across southern Australia and, although similar in shape, weight, and tooth count, are easy to identify by the dorsal pattern, but can be very difficult to differentiate when this pattern is unusual, indistinct, or absent (e.g. albino specimens). Each of these two species has a radula and animal distinct from each other, with these differences common to both typical and atypical specimens. The animal color of both species varies from pale yellow to rich orange, with most specimens of *N. piperita* tending to be paler than *N. comptonii*, but in *N. comptonii* the color whether it is pale or rich, is the same on the tentacles and the siphon. The tentacles of *N. piperita* are always richer in color and red tipped, and the siphon is white.



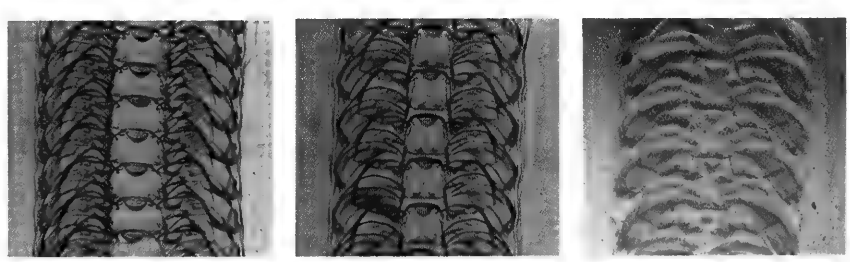
**Left: *Notocypraea comptonii* from Flinders, Victoria, note the orange mantle and body, including the siphon and tentacles.**
**Right: *Notocypraea piperata* from Corny Point, South Australia, with a similar shell and an orange body, but note the white siphon and the red tentacles.**

The central tooth of the radula of *N.comptonii*, as described by Griffiths, is a truncated triangle. In the lower corners are two basal denticles positioned obliquely with the tips pointing outwards. Not mentioned in the review is that when the radula is mounted in a relaxed position, the central teeth usually overlap or abut. This is a feature that does not occur in any other species of *Notocypraea*. In contrast the central tooth of *N. piperta* is square and the basal denticles are situated towards the center of the tooth, pointing downwards parallel to it, and the central teeth are usually separated as they are in all other species of *Notocypraea*. Possibly due to the increasing use of the scanning electron microscope (SEM) in the late 1960s, the mounting of radulae by earlier conventional methods has declined in popularity. My early slides mounted in Euparal were difficult to photograph, but I found in 1980 that *Notocypraea* radulae sealed on a slide in Aquamount (a new water based mounting compound) and stained with Lignin Pink, produced excellent results in color photographs. This method eliminates the need for dehydrating the radulaand allows it to be mounted in a relaxed state, and the stain highlights important areas of the teeth. Although I have SEM images of both species, I find the Aquamount and Lignin Pink procedure a rapid and cost effective way for accurate identification and statistical study of a large number of radulae.

Specimens of both species, when found alive in the field, can be identified by allowing the animal to crawl and show its mantle, siphon, and tentacles. This applies to all specimens, including albino specimens; the identity can be confirmed by the radula if required. *N. wilkinsi*, as described by Griffiths with respect to its radula and the original description, as a form of *N. piperita*. If Griffiths had not had the foresight to describe the animal and preserve the radula, the true identity of *N. wilkinsi* would never have been known. In over 30 years collecting I have taken only one live specimen from near the type locality that compares to the shell, animal, and radula characteristics of the type specimen of R.J. Griffiths. Creamy white unspotted and unbanded specimens, of which I have several from Cape Liptrap and Bear Gully, about 100km S.E. of Flinders, long regarded by collectors as *N. wilkinsi*, have proven by their radulae and animals to be forms of *N. comptonii*. As it is very difficult to distinguish morphologically between the creamy white forms of both species from these areas, some of the paratypes, of which no animal studies have been done, may not be the same species as the holotype.

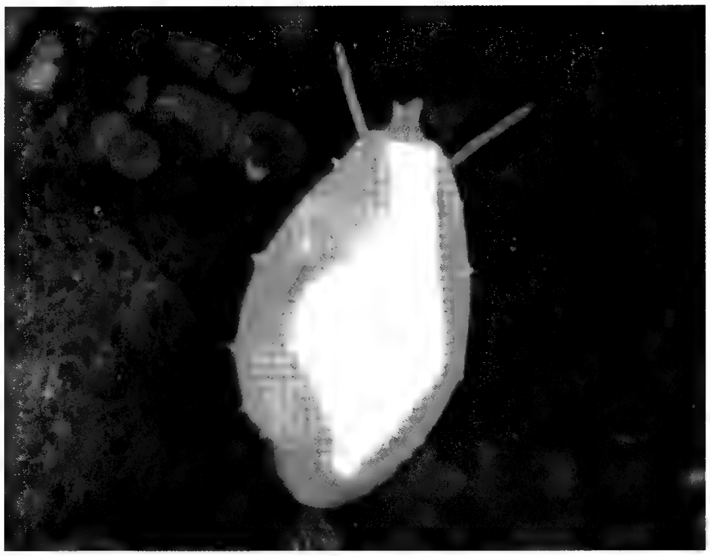


**Copy of R.J. Griffiths' original line drawings in his 1962 review: *N. comptonii* (left), *N. piperata* (middle), & *N. wilkinsi* (right).**



**Compare the drawings by Griffiths (above) with the photographs (below): *N. comptonii* from Flinders, Victoria, (left); *N. piperata* from Corny Point, South Australia (middle); and *N. wilkinsi* (holotype, No. F19903 from Flinders, Victoria (right). Photos by Don Cram.**

Bradner and Kay in their "Atlas of Cowrie Radulae" illustrated a *N. comptonii* radula for *N. piperita*, but a normal *N. piperita* radula for *N. bicolor* (Gaskoin, 1849). Also illustrated are the radulae of *N. mayi* (Beddome, 1898) and *N. trenberthae* (Trenberth, 1961), known synonyms of *N. comptonii*. They have clarified this by saying these have been included as they might contribute to the investigation of their validity. There is no justification to regard *N. bicolor* as a subspecies of *N. piperita*, as both *N. piperita* with narrow broken bands and the *N. bicolor* form with a broad broken central band, occur together over their entire range. The animal and radula are identical in both forms. The holotype and radula of *N. dissecta* Iredale, 1931, type locality 45 fathoms off Twofold Bay N.S.W., is housed in the Australian Museum and its radula confirms it is a form of *N. piperita*, as does the radula of *N. occidentalis* (Iredale, 1935), type locality Geographe Bay, W.A. *N. mayi* described from Tasmania is a paler inflated form of *N. comptonii* as is *N. casta* Schilder & Summers, 1963, a pure white form described from Port MacDonnell, S.A. The names *subcarnea* (Beddome, 1896) and *albata* (Beddome, 1897) have for many years been loosely applied to color forms of *N. comptonii* from Port MacDonnell, but neither is related to this species (personal examination of type specimens).



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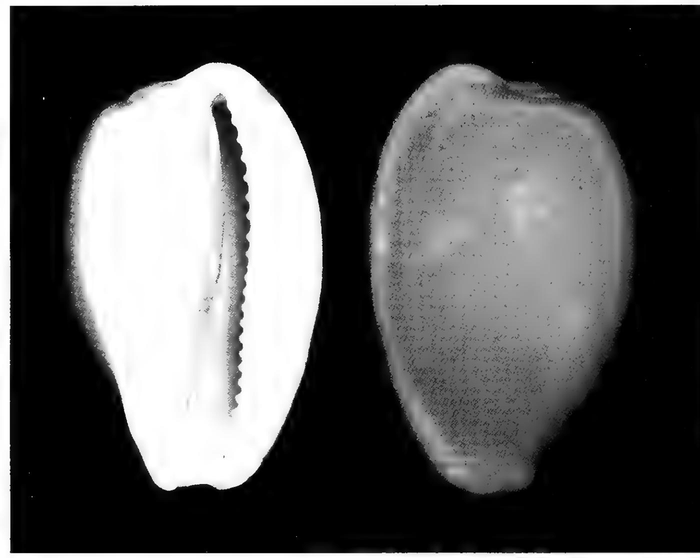

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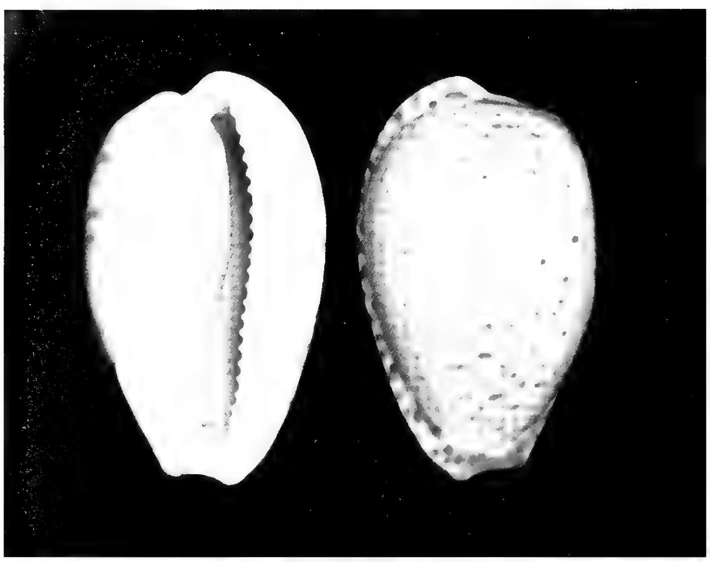
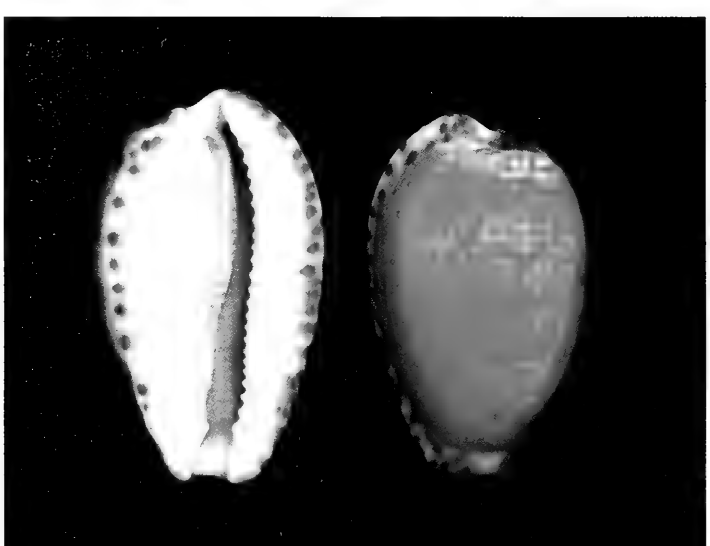


3.

1. Living *N. comptonii* from Point MacDonnell, South Australia, with a pale colored body.
2. *N. comptonii*, 21mm, ventral & dorsal view of albino specimen from Cape Liptrap, Victoria. I.D. by animal & radula.
3. *N. comptonii*, 26mm, ventral & dorsal view of atypical specimen from Port MacDonnell, South Australia. I.D. by animal & radula.
4. *N. comptonii*, 23mm, ventral & dorsal view of atypical specimen from San Remo, Victoria. I.D. by animal & radula.
5. *N. comptonii*, 19mm, ventral & dorsal view of atypical specimen from Cape Liptrap, Victoria. I.D. by animal & radula. Photos of this specimen alive are often the only proof skeptics will take to prove its identity.



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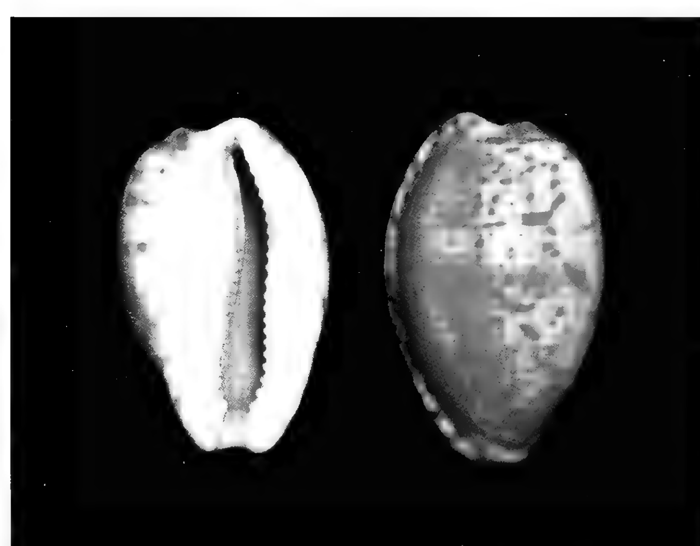

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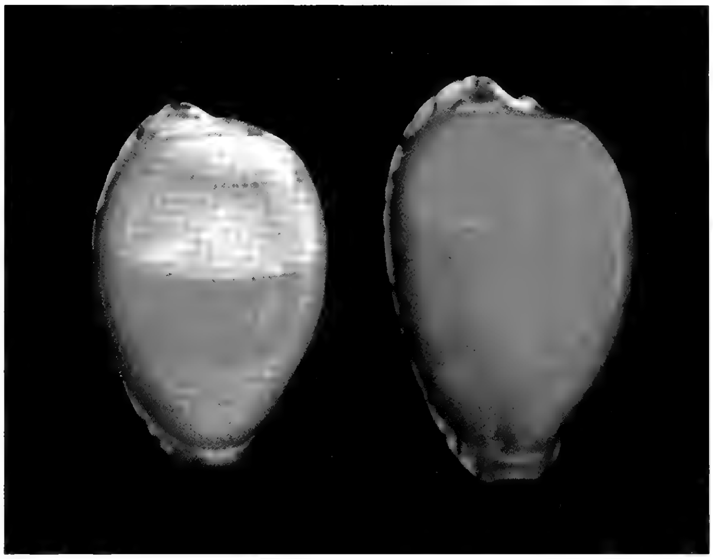

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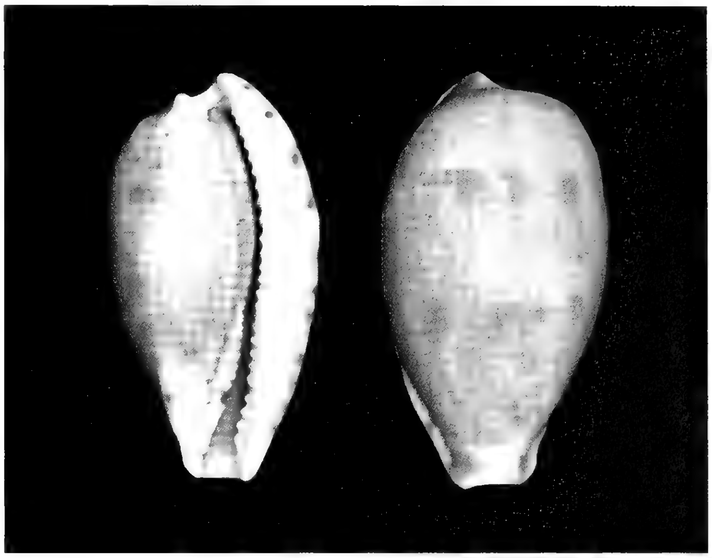
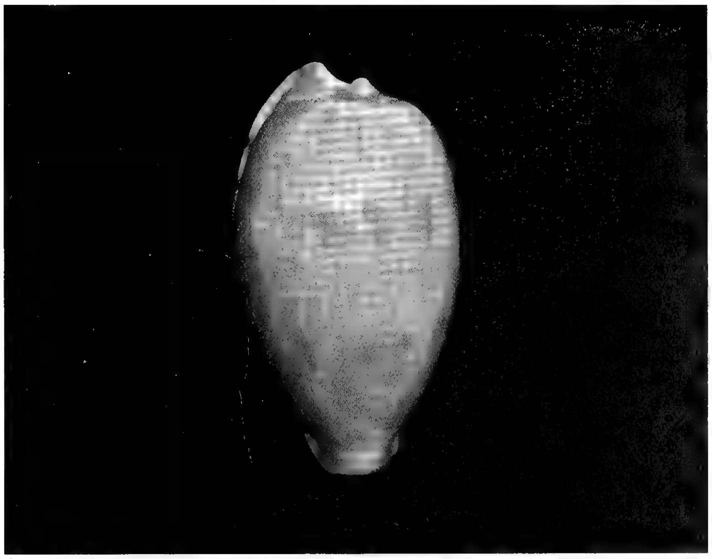


7.

6. Left: *N. comptonii*, 23mm, dorsal view of atypical specimen from Port MacDonnell, South Australia. A similar specimen was collected at Flinders, Victoria. I.D. by animal & radula. Right: *N. comptonii*, 25mm, dorsal view of typical specimen from Point Brown, Smokey Bay, South Australia. I.D. by animal & radula.
7. & 8. *N. dissecta*, 20mm (topotype, F104974, Museum Victoria), ventral & dorsal view of typical specimens from the type locality, 45 fathoms deep, off Twofold Bay, Eden, New South Wales. Dredged by Neil Buckland in 1960. I.D. by R.J. Griffiths.
9. &10. *N. piperata*, 24mm, ventral & dorsal views of atypical specimens collected on the same reef in Flinders, Victoria, as the original holotype of *N. wilkinsi*.



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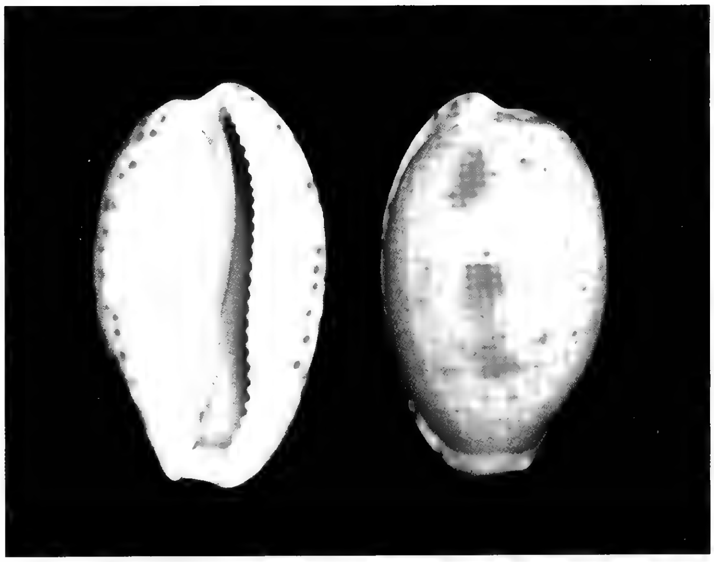

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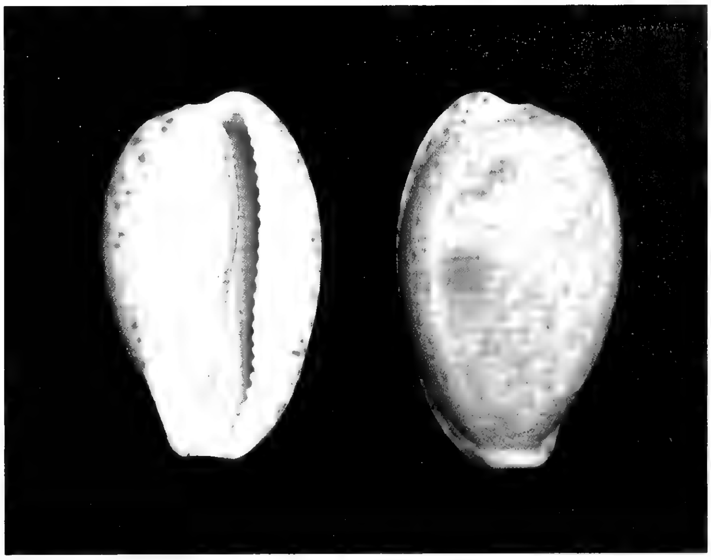

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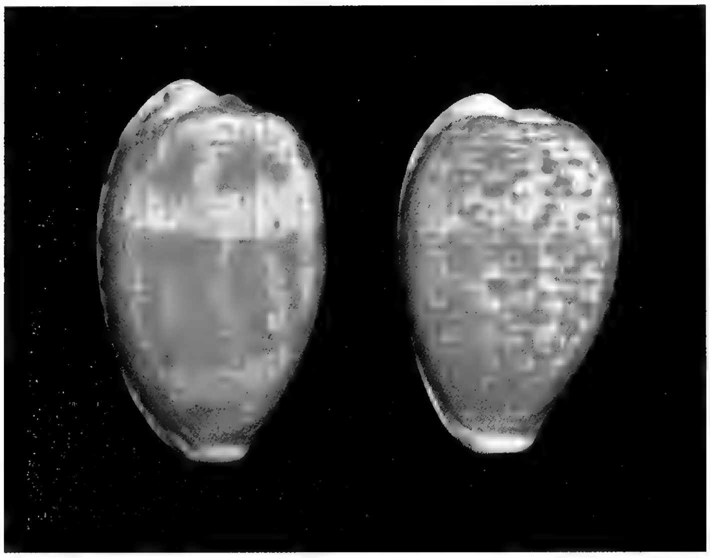
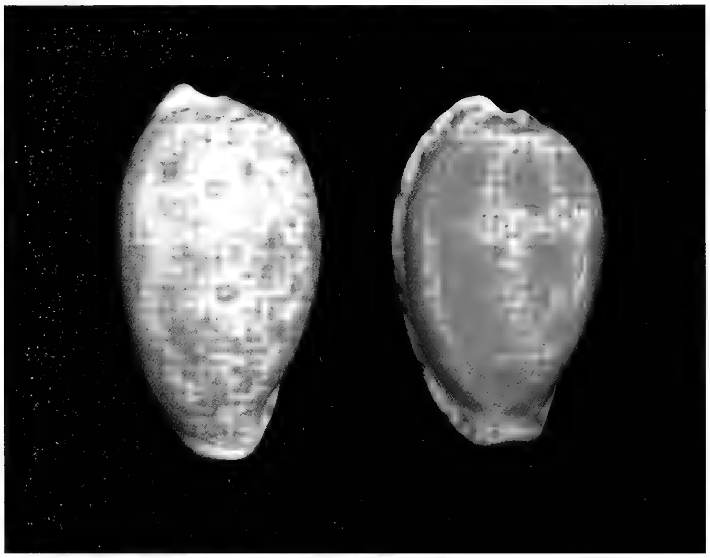


Above left: *N. piperata*, 23mm, dorsal view of typical specimen from Point Brown, Smokey Bay, South Australia. I.D. by animal & radula. Above right: *N. piperata*, 24mm, dorsal view of atypical specimen from Anxious Bay, South Australia. I.D. by radula.
Below left: *N. piperata*, 23mm, dorsal view of atypical specimen from Yallingup, Western Australia. I.D. by radula. Below right: *N. piperata*, 22mm, dorsal view of typical specimen from Port Bay, Shoreham, Victoria. I.D. by animal & radula.



The reason for the confusion about the use of anatomical characteristics is unclear, but I suspect it is due to the unavailability of sufficient material to study or by the ease by which reviewers can speculate conchologically. Radular studies conducted on a small sample of hard to identify specimens could lead to confusion because of a predetermined view of the identity of each specimen. Some variation and aberrant radular forms occasionally occur in all species of *Notocypraea*, but in this complex the variation is minimal. The radulae of *N. declivis* can vary considerably, as can the shells, and this variation is being examined in an ongoing study of this species. Lorenz and Hubert in "A Guide to Worldwide Cowries" raised *N. occidentalis* to specific rank on conchological grounds, an action I do not believe justified. I also disagree with their identification of shells they call *N. comptonii mayi* "*wilkinsi*" from Spencer Gulf, South Australia. The shells illustrated for *N. wilkinsi* are pale-banded *N. comptonii*. Finally, I do not agree with their listing of *N. hartsmithi* (Schilder, 1967) as a valid species. Its fine teeth, extended fossula, plain dorsum with narrow interrupted bands, and slightly rostrate posterior are similar to *N. dissecta* (Cram, 2005) (Topotype F104790 from the collections of Museum Victoria, illustrated). [Ed. Note: the status of *N. hartsmithi* as a junior synonym of *N. dissecta* has also recently been acknowledged by Lorenz in "Taxonomic Notes on Two Poorly Known Species of *Notocypraea* (Gastropoda: Cypraeidae)," *Visaya*, vol. 1, no. 5, November 2005, p. 16] The radulae illustrated here of *N. piperita* and *N. comptonii* are taken from typical specimens from Corny Point, South Australia, and Flinders, Victoria.

*N. piperita* and *N. comptonii* are distinct species and there are many localities where typical specimens occur together in equal numbers, particularly in Western Port Bay, Victoria, and at several localities in South Australia. They are clearly distinguishable by their dorsal coloration and pattern. Unlike tropical cowries, the *Notocypraea* group have direct development with no free-swimming veliger stage. Thus a single locality may have a number of atypical specimens. Determining the identification of atypical specimens of *N. pipertia* and *N. comptonii* can be difficult using just shell morphology. The teeth of *N. piperita* are slightly finer than *N. comptonii* and the fossula slightly more developed with the lower edge extending slightly into the aperture. The upper and lower parts of the columellar teeth may not exactly align at the center of the fossula, (Wilson, 1993). The teeth of *N. comptonii* are slightly coarser with the lower edge of the fossula usually less prominent than in *N. piperita*. This is not foolproof but can serve as a useful guide. Tables of tooth count, length to width, and height ratio and weight (including standard deviation) have been published (Griffiths, 1962) and (Cram, 2003). The Griffiths table also includes extension of the lower edge of the fossula into the aperture as a percentage of length of the shell. Readers should use Barry Wilson's *Australian Marine Shells* as the most reliable guide to identification.

The study of this complex involved over 100 specimens for which I have mounted radulae. This is part of a study of the *Notocypraea* group that I have been researching for over 30 years, involving a large series of specimens that were mostly personally collected in all states of Australia from which they occur, as well as some from museums and fellow collectors. A comprehensive and statistical analysis of the shell, radular, and animal characteristics of the group is being prepared for subsequent publication.


**Selected references:**

**Bradner, H. & Kay, E.A.** 1996. An Atlas of Cowrie Radulae, The Festivus, A publication of the San Diego Shell Club, 28.

**Cram, D.J.** 1992. The *Notocypraea* types of C.E. Beddome. Australian Shell News, No 78 : pp 4-5.

**Cram, D.J.** 2003. On the Trail of an Australian Cowry: *Notadusta eugeniae* Cate, 1975, American Conchologist, Vol.31, No.4 . pp 20-21.

**Cram, D.J. 2005** *Notadusta hartsmithi* Schilder, 1967: is it a valid species? Australian Shell News, No.125/6 : pp 1-3.

**Griffiths R.J.** 1959. A new species of the *Cypraea* subgenus *Notocypraea*. Memoirs of the Nat. Museum, Melbourne 24. pp. 97-101.

**Griffiths R.J.** 1962. A review of the Cypraeidae genus *Notocypraea*. Memoirs of the National Museum, Melbourne 25. pp.211-231.

**Lorenz, Felix & Hubert, Alex.** 2000. A Guide to Worldwide Cowries, 2 ed, ConchBooks, Germany, pp. 97 – 103, pl. 32 - 34.

**Wilson, B.** 1993. *Australian Marine Shells*, Odyssey, Kallaroo, W.A., Vol.1: pp 186-187.

| Characteristic | *N.comptonii* | *N.piperita* | *N. wilkinsi* |
|---|---|---|---|
| Shell length (mm) | 22.6 | 21.9 | 24.3 |
| Radula length (mm) | 8.8 | 7.7 | 7.4 |
| Average radula width (μm) | 515 | 380 | 400 |
| Central tooth height (μm) | 100 | 90 | 100 |
| Central tooth width (μm) | 140 | 90 | 90 |
| No. of radula rows | 93 | 83 | 70 |
| No of rows/mm | 10.6 | 10.8 | 9.5 |
| Average overlap of central teeth (μm) | 5.5 | - | - |
| Average gap between central teeth (μm) | - | 5.0 | 5.0 |

Measurement criteria used are based on that of Bradner & Kay 1996 and taken using an eyepiece graticule in a compound light microscope. Measurements in micrometers (μm) are rounded to the nearest five except those measuring tooth gap and overlap.

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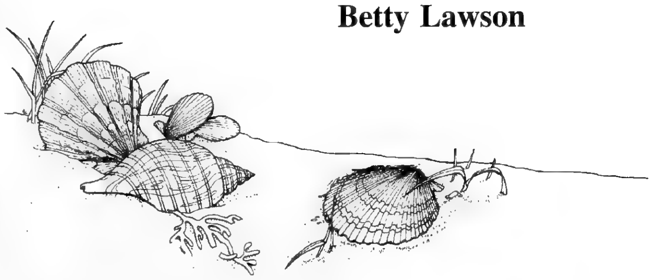
## In Memoriam

**Gerrit de Graaff**
**Grace Johns**
**Petr Kuchar**
**Betty Lawson**




The 2006 Annual Convention of the Conchologists of America will be in Mobile, Alabama, from 31 May to 4 June 2006. The convention will be at the Riverside Plaza, soon to be renamed the Marriot Renaissance in downtown Mobile. The theme this year is "Sea Treasure," in commemoration of the publication of the book by the same name written by Alabama's most famous conchcologist, the late Kathleen Yerger Johnstone. Events will include a number of field trips, presentations on shells and shell collecting, silent and oral auctions, a shell show, a banquet, the very famous bourse, and lots of old friends to meet and new friends to make. Don't miss this very special event!

As North American cities go, Mobile is a fairly old one. It was founded about 300 years ago by the French, who were followed by the British and Spanish, before the city became part of the United States. Despite a series of devastating fires, many buildings from the 1830's survive and several are open to visitors.

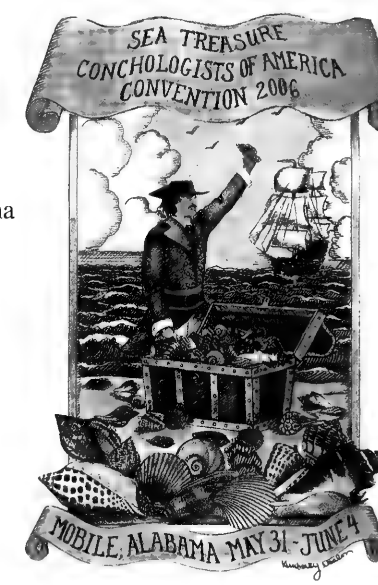
The Dauphin Island Sea Lab operates an Estuarium that is well worth visiting. Aquaria hold fish, reptiles, and other animals representative of freshwater to marine communities from the Mobile-Tensaw Delta through Mobile Bay to the Gulf of Mexico. Visitors to Dauphin Island should also not miss the Audubon Sanctuary, a short distance from the Estuarium, with paths and walkways through different habitats. Bring your binoculars and walk quietly to see herons, birds of prey, and many other species.

If you are interested in Civil War history, see Fort Gaines on Dauphin Island and take the ferry across the mouth of Mobile Bay to see Fort Morgan on the other side. Incidentally, there is sometimes good shelling on Gulf beaches at Fort Morgan, where choppy water and tides may bring unusual species to shore.

Another sight that may interest some visitors is Bellingrath Gardens, a large botanical garden south of Mobile, arranged mainly in traditional Southern style with lots of azaleas. Mobile's nickname is the Azalea City and several large shrub nurseries are based in the area. A boat tour is available on the neighboring Fowl River, an area recommended for nature buffs.

Also recommended is the Biophilia Nature Center on the other side of the bay.

The local seafood may surprise you. Local specialties include crab claws and soft-shell crabs (blue crab, *Callinectes sapidus*), flounder, oysters (*Crassostrea virginica*), and several kinds of Gulf fish as well as shrimp. Also try the freshwater crawfish and catfish grown in ponds in central Alabama.




Enjoy!
Andy

Andrew K. Rindsberg
Geological Survey of Alabama

Mobile tourism website:
http://www.mobile.org/
Dauphin Island Estuarium:
http://estuarium.disl.org/
Bellingrath Gardens:
http://www.bellingrath.org/
Biophilia Nature Center:
http://www.biophilia.net/

**Registration forms were included in the December 2005 issue. If you can't find them, you can get the forms on line at: www.conchologistsofamerica.org**

**Opposite page from top clockwise: Dauphin Island sunset, the Battleship U.S.S. Alabama, sand dunes on Dauphin Island, and Bellingrath Gardens.**

# CUBA AND A FEW OF ITS LAND SNAILS

**By**
**Neil E. Fahy**

"Why," I am asked, "do you want to go to Cuba?" To a student of land snails it is the Garden of Eden. The complex geology has, through the course of time, given rise to a myriad of isolated snail niches. Most of these are located in the limestone ranges of which some are arid and some are rain forest. There are multitudes of calcium loving genera and species. In 1999, Espinoza & Ortea listed 1,299 species in 158 genera in 35 families. Of these, 99% are Cuban endemics! If described subspecies are included, there are 3,438 taxa!

## 1-INTRODUCTION

Cuba, the most westerly of the Greater Antilles, and the largest Caribbean island, is 800 miles long and 60 miles wide, comprising an area of 42,880 square miles. It is only ninety miles south of Florida and just south of the Tropic of Cancer.

Cuba is not a single island but a group of islands. The main island is oriented east-west and has a varied topography of mountains, coastal plains, and swamps. The four mountainous regions are the Cordillera de Guaniguanico along the north coast west of Havana, the Sierra de Cubitas in the north central coast, the Guamuhava Massif on the south central coast, and the great Sierra Maestra in the eastern quarter of the island. The areas between these mountains are flat plains. Most of the swamps are along the south coast. Innumerable coral keys are strung like pearls along the north coast. On the south coast are the large Isla de la Juventud and its satellite keys (Fig. 1).

Cuba has been restricted to U.S. travel since the United States Embargo of 1961. In the past few years the U. S. Treasury Department has issued visas for groups of U. S. citizens to visit Cuba for cultural purposes. I was fortunate to join one group for a 15-day tour in March 2002 and another for a 13-day tour in March 2003.

## 2-HAVANA

On both trips we flew to Havana from Mexico. The city of Havana is the hub of Cuban life: politically, socially, and culturally. The Cuban population of 11 million is 73% urban. Of the 11 million, 20% live in Havana and only 3% live in the second largest city, Santiago de Cuba. Snails also live in Havana. I found several species in rock outcrops as well as the coarse-ribbed *Cerion mumia* (Bruguière, 1792) on limestone near the entrance to Castillo de San Salvador de la Punta (Fig. 2).

## 3-WESTERN CUBA - PINAR DEL RÍO PROVINCE

The province of Pinar del Río extends from Havana to the western tip of the island. Guaniguanico Massif, a mountainous spine, runs along the northern shore and coastal plains extend to the south coast.

### Viñales

The Viñales region has 134 land snail species, 88 (65%) of them local endemics. Of the endemics there are 40 species of urocoptids (Pulmonata) and 32 species of annulariids (Prosobranchia).

The community of Viñales is a two hour drive by chartered motor coach west of Havana. It is situated in a beautiful fertile valley among the limestone *mogotes* or hillocks that form some of Cuba's most spectacular scenery. The mogotes form in limestone regions. They are resistant remnants left after more soluble rock has eroded away. The mogotes are covered with tropical vegetation. They offer wildlife habitat and rugged hiking, as well as difficult rock climbing (Fig. 3). The mogotes resemble isolated islands in a sea of cultivation or, in olden times, grass fields. Because their snail fauna evolved in isolation, each mogote has its own endemic species or subspecies.

The Viñales valley has rich red soil that has helped make it a center of tobacco production. Some of Cuba's best cigars (if you like cigars) come from this province. The region also produces mangos, guavas, papayas and vegetables.

We walked from town through tobacco fields toward Mogote del Valle. At the base of the mogote we went up a trail to a level lunch spot and then on to the top. The trail had some steep places where hand climbing was necessary. I did the first two steep sections but the last climb was really steep with only a few hand supports. I "chickened out" (old guys can do that) and collected along a narrow terrace. Snails were everywhere. A bagful could be collected in minutes. Annulariids, *Farcimen* (Fig. 4), and *Viana regina* (Morelet, 1849) (Fig. 5 & 6) were abundant. Operculate snails with the sexes in separate animals are often sexually dimorphic. *Viana regina* carries this to the extreme. The males have a notched outer lip that is straight in females (Fig. 7). The shells one of our summit climbers collected were the same species.

### Ancon

We drove northeast from Viñales to Ancon where we hiked along a pine covered sandstone ridge to the junction of the Galera & Ancon Ranges. We crossed a few streams and had some nice views but, in contrast to Viñales, there were no snails. I checked the vegetation for the arboreal *Liguus* but found none.

We walked to the north end of the Galera Range near the Abra River where there were many limestone caves. Collecting at the base of the cliff included live *Jeanneretia parraiana paralella* Torre with its two spiral bands (Fig. 8).

### Cueva de San Miguel

There are caves or chambers (cuevas) within the mogotes. South of Ancon, Cueva de San Miguel at Palenque (Fig. 9) doubles

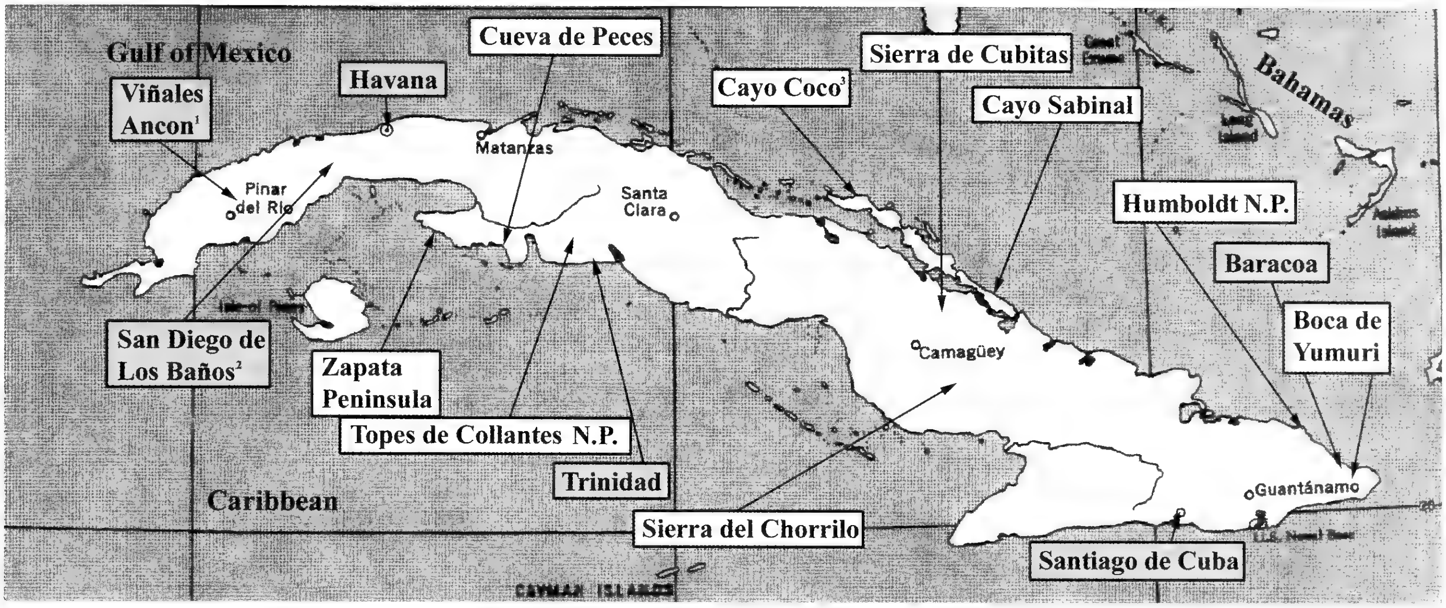



**Fig. 1 Cuba locator map (villages are in gray rectangles, sites in white rectangles).**
**1. Viñales, Ancon includes Cuevas San Miguel and Cavenera de Santo Tomás.**
**2. San Diego de los Baños includes Cueva de las Cabana dos Pinos and Cueva de las Portales.**
**3. Cayo Coco includes Cayo Paredon Grande.**

**Fig. 2 *Cerion* shells with strong radial ribs are from coastal habitats adjacent to deep water (*Cerion mumia*, 25mm).**

**Fig. 3 The mogotes present an ethereal landscape. Each can have a distinct endemic fauna.**

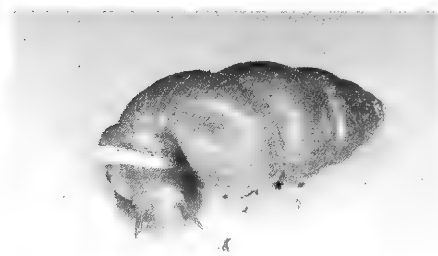


**Fig. 4 The operculate genus *Farcimen* has a single set of tentacles with eyes at their base (29mm).**

as a nightclub and restaurant called *El Palenque de los Cimarrones*. This cave and myriad other caves and tunnels in the region were once used as shelter for pre-Columbian peoples and in the 1800s as hiding places for escaped slaves (*cimarrones*). There are two entrances to the cave: the "front" and the "back."

Along the base of the cliff near the "front" entrance I found the primitive slug *Veronicella cubensis* (Pfeiffer, 1840) (Fig. 10), *Viana regina* (Fig. 11), and several other genera.

The next time we visited Cueva de San Miguel we drove to the cave's "back" entrance (Fig. 12). I had a quick outdoor lunch and then collected near the cave's "back" entrance. The collecting was good (Fig. 13). I found the large pulmonate *Jeanneretia subtussulcata* (Pfeiffer, 1863) (Fig. 14) with its characteristic dent on the base opposite the aperture (Fig. 15) This indentation produces a constriction of the whorl on the inside of the shell (Fig. 16).

**Caverna de Santo Tomás**

To the southwest, Caverna (cavern) de Santo Tomás is the largest cave system in Cuba with eleven miles of galleries. We had a picnic lunch at the cave headquarters where we were equipped with hard hats and headlamps. We walked 300 yards to the cave entrance (Fig. 17). I have nothing against caves but the potential snail collecting looked better elsewhere, so while the others entered the cave, a guide and I worked our way back to the coach.

In about four inches of decayed leaves I found another *Veronicella cubensis* (Fig. 18). The mantle covers the entire animal and the foot is tripartite (Fig. 19). While sorting specimens I found another *Veronicella sp.* that appeared to have projections on the mantle surface.

Shells were everywhere (Fig. 20). They included *Chondrothyra* sp., *Emoda sagraiana* (Orbigny, 1841), *Eurycampta pinarensis* Aguayo, *Farcimen* sp., *Jeanneretia parraiana, Liguus fasciatus bermudezi* Clench, 1934, *Liguus fasciatus flammulus* Clench, 1934, *Oleacina straminea* (Deshayes, 1850), *Septipellio stigmata, Viana regina,* and *Zachrysia guanensis* (Poey, 1858). It took us two hours to traverse the 300 yards to the coach. I was given the shells that were found inside the cave. There were no different species.

**San Diego de los Baños**

At San Diego de Los Baños, east of Viñales, Julio, an entomologist from the Natural History Museum in Havana and I visited the Cueva del Taita, a short distance from the hotel. We walked on a well-kept trail along the edge of a field to the base of a mogote. A small cave in the mogote consisted of two rooms with a broken ceiling between. In and around the cave were many urocoptids (Fig. 21 & 22) and annulariids, as well as *Farcimen, Oleacina, Viana*, and *Zachrysia.*

**Cueva de las Cabana dos Pinos**

We drove west on an undulating road through the village of Galalon to the Cueva de las Cubana dos Pinos. Once there we walked along a sandstone slope with pine trees and some large limestone drift boulders where I found some snails. We then walked down a once paved staircase and trail to the cave entrance. The cave is very small, almost too small to enter. I collected annulariids, *Jeanneretia, Liguus, Viana*, and *Zachrysia* at the cave entrance and downslope.

**Cueva de los Portales**

From Galalon we drove to the very large Cuevas de los Portales where Che Guevara had his headquarters during the start of the Revolution in 1959 (Fig. 23) I collected on the floor of the cave and around the area. Julio found some annulariids suspended on two-inch long mucus threads from a sloping wall of the cave in a two-foot wide crevice about five feet above the cave floor (Fig. 24). Torre & Bartsch (1938:198) described this behavior, of "resting" during the day on a mucus thread in species that feed at night. Julio collected a specimen that he gave to me (Fig. 25).

**4-CENTRAL CUBA**

This region is dominated by flat plains with the Sierra de Cubitas across the northern edge. The Zapata Peninsula projects into the Caribbean on the south coast. Smaller mountain areas are Topes de Collantes north of Trinidad and the Sierra de Chorrilo at Belen.

**Zapata Peninsula**

The Zapata Peninsula is flat swamp country on the south coast of Central Cuba. It was intended to be drained by canals that were cut across it. This important wetland, which resembles Florida's Everglades, covers almost the entire peninsula and harbors 900 species of plants, 171 species of birds, 31 species of reptiles, and many mammal species, including the endemic pygmy jutia (Rodentia, *Capromys*).

We took a side road to Canal de los Pates where we boarded boats with outboards (Fig. 26) and went down the canal to its junction with the Hatiguanico River. Here we turned north to the river's source where the water was bubbling up from an underwater cave. Within the swamp there are low flat-topped islands called hummocks (Fig. 27). We walked on a hummock for awhile. While the others looking up for birds and I looked down and found *Pomacea* egg clusters on tree branches (Fig. 28) and snails, including *Farcimen, Zachrysia*, and *Liguus.*

**Cueva de Peces**

The Cueva de Peces is located near the shoreline on the flat south coast. In contrast to the caves in the mogotes, this cave is a cenote. Some went swimming in the cenote, others birdwatched, and I snailed. The limestone terrace containing the cenote is covered with a semi-deciduous forest. There are many other sinkholes in the limestone that are hazardous for walkers like me. I skipped lunch to have more collecting time. The snails were all small annulariid and urocoptid species. The pulmonate *Cerion*, called the peanut shell, usually occurs adjacent to the shoreline. I walked about 100 yards north of the cave entrance along the shoreline and returned walking about 50' inshore in coastal vegetation. I saw no *Cerion*!

**Trinidad**

On the road as we approached Trinidad were hundreds of land crabs on their annual pilgrimage to their meeting ground for mating and egg laying. I have never seen so many crabs (Fig. 29). It brought to mind the Barbarian hordes invading Europe.

National Geographic Magazine calls the city "Cuba's colonial treasure" (Fig. 30). In the city center are over 50 blocks of immaculately preserved and restored historic mansions and plazas. The streets are cobblestone and many houses are adorned with brightly painted walls and wooden shutters. Music radiates Cuban rhythms and seems to pour with many decibels onto the streets from the nearby houses and bars.

We visited historic buildings and an archeological museum exhibiting pre-Columbian skeletons and Spanish artifacts. In 2002 the street vendors displayed some unique items, like cameras and cars made from tin cans. In 2003 no tin can items were seen.

**Topes de Collantes National Park**

North of Trinidad is the road junction to the mountains of Topes de Collantes. Here, while we waited for a former Russian military personnel carrier to take us into the park, I found snails in an agave. We climbed a ladder into the bed of the truck where there were benches along both sides and down the center. The road was very steep with many sharp turns. Our tour coach could never have made it.

At Topes de Collante, at an elevation of 2,500 feet, we continued past a TB hospital-cum-hotel to a nature area. Here we left the truck and walked with a local guide into the limestone semi-deciduous spiny *Acacia* forest. There were snails near the limestone outcrops. We went to Cueva de Altar, which was small and had a few annulariids, *Oleacina*, and *Zachrysia* near the entrance. At the higher elevations the spiny *Acacia* were replaced by tree ferns that were much more friendly.

**Sierra de Cubitas**

We drove from Trinidad east through Camaguey to Reserve Ecologica Limones-Tuaboquey in Sierra de Cubitas, a limestone

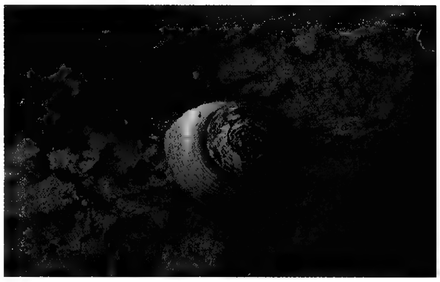


Fig. 5 A female *Viana regina* rests on a limestone outcrop (25mm).


Fig. 6 The colorful aperture of *Viana regina* may be why it's called *regina.*


Fig. 7 Sexual dimorphism in the operculate *Viana regina*; the aperture lip in males is notched (25mm).


Fig. 8 The pulmonate *Jeanneretia parraiana paralella* has two spiral bands (22mm).


Fig. 9 Front entrance to Cueva de San Miguel.

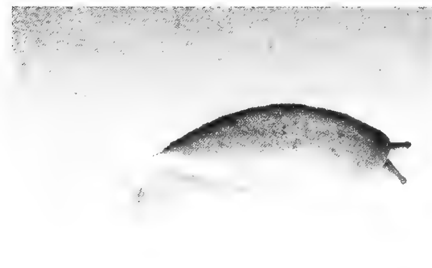


Fig. 10 The slug *Veronicella cubensis* was found at Cueva de San Miguel.


Fig. 11 The operculate *Viana regina* crawling on a leather chair.

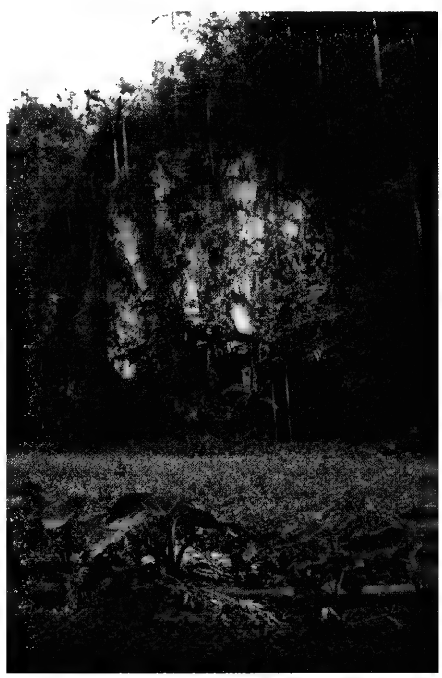


Fig. 12 The cliff at the back entrance to Cueva de San Miguel.


Fig. 13 *Zachyrisia* was found at Cueva de San Miguel (48mm).


Fig. 14 *Jeanneretia subtussulcata* has a body whorl indentation (32mm).


Fig. 15 The indentation on *J. subtussulcata* is opposite the aperture.


Fig. 16 The indentation restricts body whorl diameter in *J. subtussulcata*.


Fig. 17 The trail to Caverna de Santo Tomás was an inviting snail habitat.


Fig. 18 The mantle of *Veronicella cubensis* covers the entire foot (53mm).

range 25 to 30 miles long that culminates in Loma Tuabaquey, 980 feet in altitude. We walked through flat semi-deciduous forest into a limestone canyon called Cima de Rolando [Chasm of Rolando]. Outside the vertical opening to the Cueva de Santa Teresa I collected: annularids, urocoptids, *Caracolus najazensis, Opisthosiphon evanidum, Lamellaxis, Liguus, Oleacina,* and *Zachrysia.* Specimens found inside the cave were no different. The canyon narrows to a gorge where, in the 1860s, there was an ambush; now there are rock climbers. On the trail to the gorge we saw a 4-foot uniformly dark-colored snake that I was told was not venomous.

We went to a vista point overlooking the Hoyo (pit) de Bonet, a huge sink hole several hundred feet deep. There wasn't time to check out the snails on its walls, so I am sure we missed some unique specimens.

**Sierra del Chorrilo**

We went south from Camaguey through flat cattle land to the village of Najasa. At Najasa we entered rolling hills and in the distance were flat-topped limestone plateaus. Belen is at the base of one of the plateaus in the Sierra del Chorrilo.

At the reserve we were met by a local guide who took us on a two-hour walk on the Sendro (trail) de los Aves. I got delayed snailing and lost the group. I went to the left around the ridge and realized they were not ahead of me. I then retraced my steps and went to the right through the deciduous forest, still no group. I then walked to a large limestone cliff with scattered boulders and a shady deciduous forest sheltering many *Liguus* shells from the bleaching of the sun. This was a snail enthusiasts dream. There was no undergrowth, which I appreciated because spiny plants seem to attack me. Collecting was spectacular with many urocoptids (Fig. 31), *Farcimen, Caracolus, Liguus*, and two *Zachrysia* with identical irregular holes on the periphery of the body whorl that, according to our guide, were made by rats (Fig. 32).

Our guide had some live *Liguus* (Fig. 33) and *Caracolus* for me to identify. She also had a dead specimen of a pagoda-shaped snail that she found in the Cueva de "Gasper Najasa" (Fig. 34). According to her it was the only cave in the area with snails. She gave me the specimen, which is possibly a variant of *Caracolus najazensis* (Fig. 35). This type of abnormality has also been observed (Aguaya & Jaume, 1945:98, pl. 9 fig. 7) in *Caracolus sagemon* (Beck, 1837) (Fig. 36).

After lunch we took the Sendro de Santa Gertrudis up a limestone ridge where I found many *Liguus* with unfaded colors. I also found a *Veronicella* slug, annulariids, urocoptids, *Caracolus najazensis, Coryda, Farcimen, Liguus, Oleacina*, and *Zachrysia*.

**5-NORTH CENTRAL COAST**

**Cayo Sabinal**

Along the North Coast are a series of islands called cayos (keys). Two of the largest are Cayo Sabinal and Cayo Coco. We drove northeast from Camaguey to Nuevitas and transferred to a small van which took us over a dirt causeway to Cayo Sabinal. The lodge consisted of five cabins with 3 or 4 people in each. My cabin (shared with a married couple) had 3 single beds and a bathroom with basin, toilet, and shower but no water. We inquired and got the water turned on. It was turned off because of a "small" leak. After we left the lodge was closed.

We drove to the Punta Maternillos Lighthouse and most of the group climbed to the top to see the view. I used the time for snailing, finding fine-ribbed unmottled *Cerion preliosus* along the road (Fig. 37).

The following day we crossed a causeway between two lagoons to see flamingos. I found some smooth, mottled *Cerion sanzi tejedoi* (Fig. 38) and the introduced carnivore *Rumina decollata* (Linnaeus, 1758).

On the southwest part of the island we stopped at an exposed limestone area with scattered trees and shrubs (Fig. 39). I found living and dead *Polymita muscarum* (Lea, 1834) (Fig. 40) on shrub stems and leaves. I asked our guide if the *Polymita* were species specific on certain plants. He said they were mainly on *Lysiloma bahamensis* (Leguminosae), *Chrysobalanus icaco* (Chrysobalanacae), and *Metopium toxiferum* (Anacardiaceae). The local species is called *muscarum* because of the "fly specks" on the shell (Fig. 41).

**Cayo Coco**

Cayo Coco is at the western end of the north coast keys. A 17-mile-long causeway without drainage passages was built across the lagoon to connect the key to the mainland. The former great flocks of flamingos are now depleted but they do have five with clipped wings in a small lagoon at the resort!

When we arrived at our lunch stop at Playa Flamingo, we were told lunch would be in an hour. Some of the group went flamingo watching, others swam, and I went snailing. Along the road I ventured into the forest at accessible places and found empty shells of the aboreal *Liguus* and *Zachrysia auricoma* but no *Cerion*.

Terrestrial hermit crabs inhabit the large *Liguus* shells. I displaced a hermit crab and found an unusual color pattern on the shell. In many species the lip color pattern is interrupted or discontinued after an injury to the mantle (Fig. 42). This 60mm *Liguus* shell showed just the opposite. There was no color pattern before the growth line, but the pattern started after (Fig. 43)!

After lunch, I told the group I'd be walking down the exit road where they could pick me up when they left. Along the road I found smooth and mottled *Cerion dorotheae* (Fig. 44).

That night we stayed at the Tryp Cayo Coco Hotel & Club, an all-inclusive hotel complex. It was huge with 960 double rooms, 12 bars, 4 swimming pools, and 11 restaurants. It was teeming with people but was a biologic desert. The cayos (keys) are being stripped of vegetation and replaced by many large "all inclusive" beach resorts financed by Cuban-Spanish joint ventures. It is ironic that in the middle of these mega developments is the Coastal Ecosystem Research Center.

After getting cleaned up, I left the hotel and walked to a narrow vegetation strip across from the entrance. Behind the narrow strip of vegetation was a cleared and surfaced area larger than our complex, waiting to be developed. I did not see any snails. With the recent development we'll never know the original biota on many of the keys. Were *Cerion* and *Polymita muscarum* here before development?

**Cayo Paredon Grande**

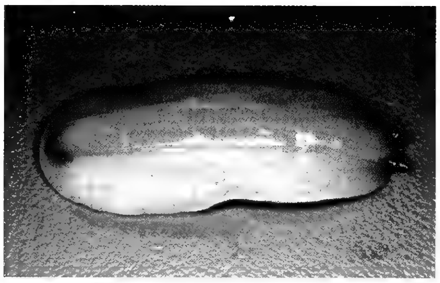


**Fig. 19 Ventral view of *Veronicella cubensis*, note the three sections of its foot (53mm).**

**Fig. 20 Shells were everywhere along the Taita Cave trail.**

**Fig. 21 Urocoptid shells with the aperture in contact with the columella (24mm).**

**Fig. 22 Urocoptid shells with the aperture free of the columella (16mm).**

**Fig. 23 Cueva de los Portales, an excellent retreat for Che Guevara during the Revolution.**

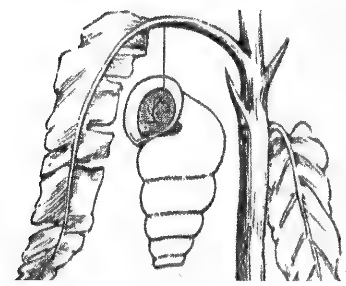


**Fig. 24 Operculate shell suspended on mucus thread (Binney 1865:fig 194).**

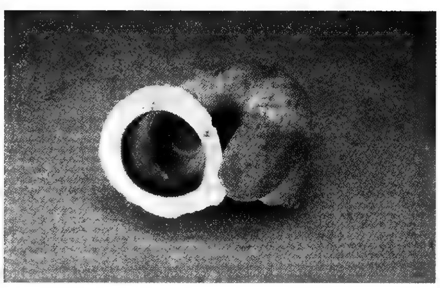


**Fig. 25 *Chondrothyrella assimilis* found suspended on mucus thread in Cueva de los Portales (18mm).**

**Fig. 26 Boat ride on the Canal de los Pates, Zapata Peninsula.**

**Fig. 27 We visit a hummock along the Hatiguanico River.**

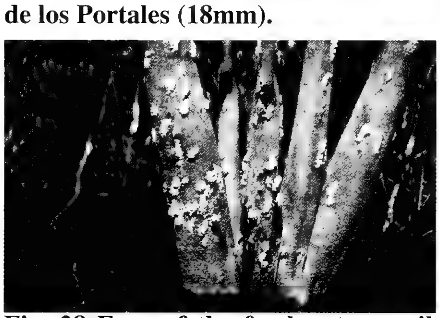


**Fig. 28 Eggs of the freshwater snail *Pomacea* attached to tree stems in the Canal de los Pates, Zapata Peninsula.**

**Fig. 29 We saw an "invasion" of land crabs near Trinidad.**

**Fig. 30 The city of Trinidad is a historical treasure.**

**Fig. 31 The aperture of this urocoptid is free of the columella and at the end of a long tube (18mm).**

**Fig. 32 These *Zachrysia* shells were gnawed by rats (28mm).**

**Fig. 33 *Liguus fasciatus* is a colorful shell.**

Fig. 34 Variation of *Caracolus najazensis* with unusual pagoda-shaped shell (H 22 W 27mm).

Fig. 37 *Cerion preliosus* has a fine-ribbed shell (19mm).

Fig. 39 This is typical *Polymita muscarum* habitat.

Fig. 42 After a shell repair on *Polymita picta picta*, the color pattern has changed (24mm).

Fig. 45 Coarse ribbed & mottled *Cerion paredonis* (19mm).

Fig. 35 A "normal" *Caracolus najazensis* shell (H 16 W 39mm).

Fig. 38 *Cerion sanzi tejedoi* shells are fine-rimmed and mottled (32mm).

Fig. 40 A *Polymita muscarum* is seen in a tree.

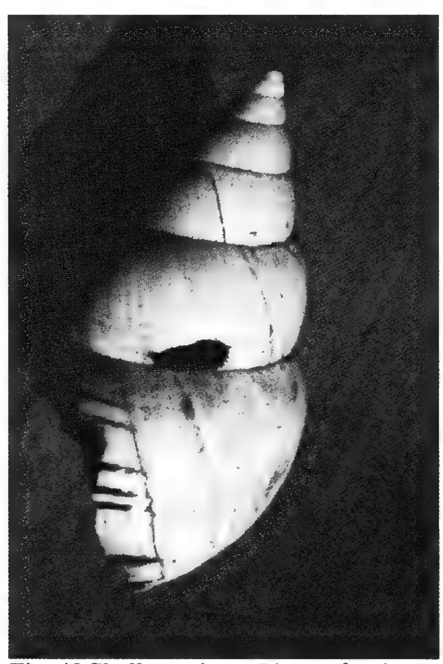


Fig. 43 Shell repair on *Liguus fasciatus*, with a new color pattern (59mm).


Fig. 36 A similar abnormality in *Caracolus sagemon* (Aguayo & Jaume 1945, pl 9 fig 5; with permission).

Fig. 41 It is easy to see why the color pattern of *Polymita muscarum* was named after fly specks.

Fig. 44 Smooth & mottled *Cerion dorotheae* found in coastal habitat with shallow water (18mm).

Fig. 46 *Cerion paredonis* aestivating on a twig (20mm).

**Fig. 47 These small, fine-ribbed *Cerion* species look like rice grains (13mm).**

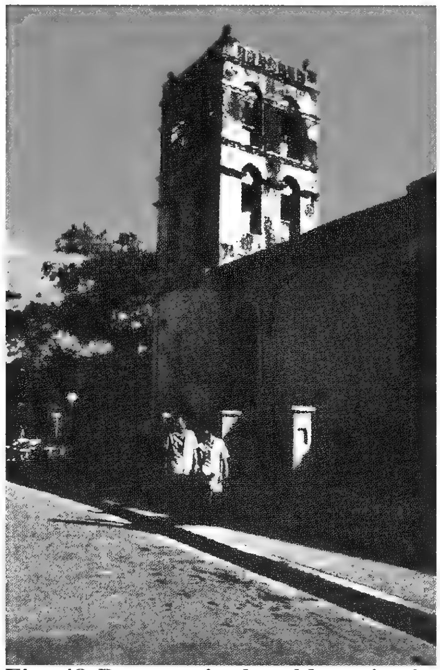


**Fig. 48 Baracoa is the oldest city in Cuba. Its church was built in 1511.**

**Fig. 49 A live unicolor *Polymita picta fuscolimbata* rests on a leaf.**

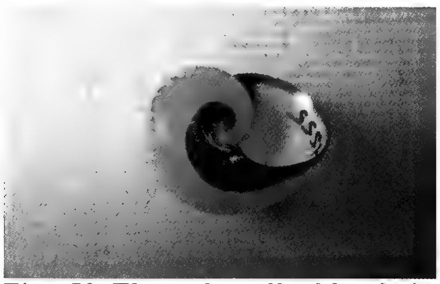


**Fig. 50 The columella blotch in *Polymita picta nigrolimbata* is sharp-edged and dark (22mm).**

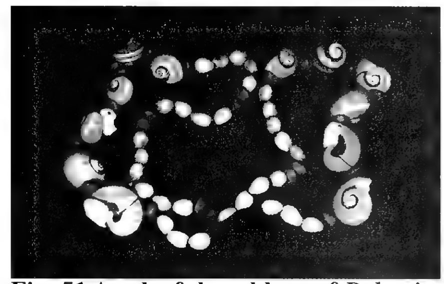


**Fig. 51 A colorful necklace of *Polymita picta picta* & *P. versicolor* shells.**

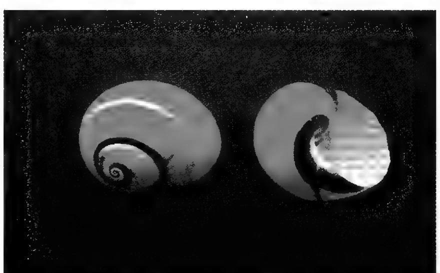


**Fig. 52 In *Polymita picta picta* the dark, sharp-edged columella blotch is cut by the growth line (26mm).**

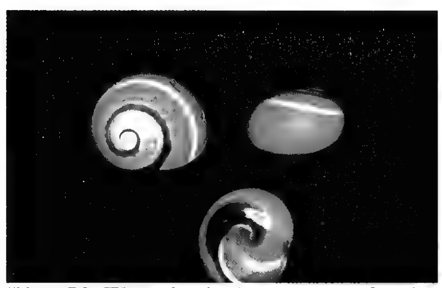


**Fig. 53 The single banded *Polymita picta fuscolimbata* has a diffuse-edged, brown columella blotch (24mm).**

**Fig. 54 The unicolor *Polymita picta fuscolimbata* has a diffuse-edged brown columella blotch (27mm).**

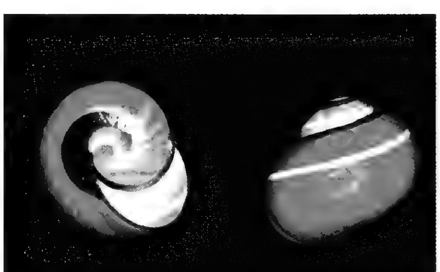


**Fig. 55 The single banded *Polymita picta iolimbata* has a sharp-edged, dark columella blotch.**

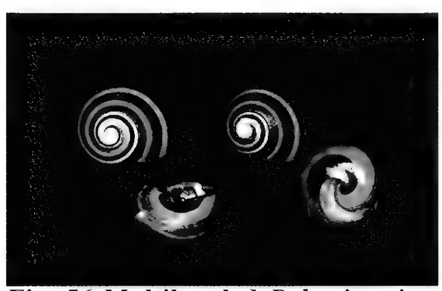


**Fig. 56 Multibanded *Polymita picta iolimbata* has a sharp-edged brown columella blotch.**

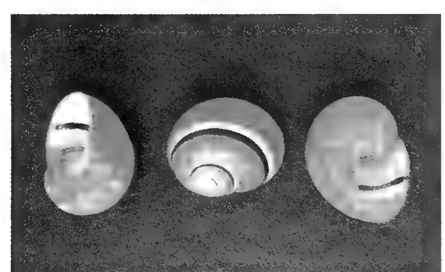


**Fig. 57 *Polymita picta roseolimbata* has a sharp-edged, pink columella blotch (27mm).**

**Fig. 58 *Caracolus sagemon* has a dark dorsal color pattern (42mm).**

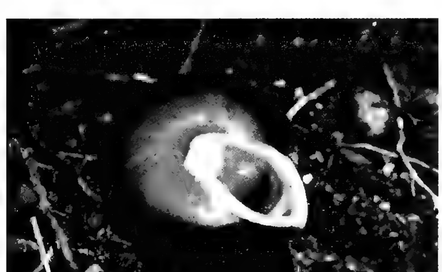


**Fig. 59 *Caracolus sagemon* has a light ventral color pattern (42mm).**

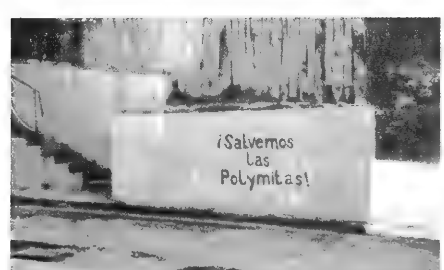



**Fig. 60 "Salvemos las Polymitas."**

East of Cayo Coco we drove over a causeway to Cayo Romano and then north to Cayo Paredón Grande. This is a mangrove region with small hummocks of dry land. At the Cayo Paredon Grande lighthouse were many skinny, smooth, mottled *Cerion paredonis* on the ground (Fig. 45), but only a few aestivating (Fig. 46). Maybe it was the wrong time of the year.

We then went to Playa los Pinos in a *Casuarina* forest. About 100 yards back from the beach and the *Casuarina* trees and under 10-foot-high palms were some depressed shells and a few tall, fine-ribbed, and mottled *Cerion* (Fig. 47).

**6-EASTERN COAST**

Until 1976 the eastern region of Cuba was called Oriente Province. It was then subdivided into five provinces: La Tunas, Holguin, Granma, Santiago de Cuba, and Guantanamo. On the north coast La Tunas and Holguin share a mountain range while the three southern provinces are the most mountainous in Cuba.

**Baracoa**

Baracoa is one of Cuba's most charming towns. It was Cuba's first Spanish settlement and is bounded by three fortresses and a broad roadway along the ocean. The oldest church in the New World was built here in 1511 (Fig. 48). Its name, Nuestra Señora de la Asunción de Baracoa, is larger than the church, a small building with a very plain interior.

**Parque Nacional Alejandro de Humboldt**

We drove north from Baracoa along the coast to Parque Nacional Alejandro de Humboldt. Starting at the community of Santa Maria we walked a 7km ridge trail loop. I saw one live white *Polymita picta fuscolimbata* Torre, 1950 on a shrub (Fig. 49). The area is pretty well broken up with farms. Our guide said the *Polymita picta* (Born, 1778) population was stable. *Polymita* are more common in the coffee and coconut plantations where they eat the fungus that forms on the leaves, an act welcomed by the growers.

The classification of *Polymita picta* subspecies depends on the color and edge character of the columella blotch as well as its offset by the growth line. Some subspecies can be determined only if the collecting locality is known. Variable color patterns are not considered in subspecies identification (Fig. 50).

Necklaces and bags of *Polymita* shells from the plantations were readily available for sale (Fig. 51). The bags contained *Polymita picta picta* (Fig. 52), *Polymita picta fuscolimbata* (Fig. 53 & 54), *Polymita picta iolimbata* Torre, 1950 (Fig. 55 & 56), and *Polymita picta roseolimbata* Torre, 1950 (Fig. 57).

**Boca de Yumuri**

We drove east along the coast from Baracoa to the tunnel at La Concha de los Alemanes. I collected *Polymita picta nigrolimbata* Torre, 1950 and *roseolimbata* Torre, 1950. We then continued to Boca (mouth) de Yumuri where we took a short 200-yard rowboat ride through the Yumuri River gorge and walked about a half-mile further upstream. I collected snails at the base of the limestone cliffs. I found annulariid operculates on the sunny east cliffs, but they were not present on the shady west cliffs.

I also collected *Caracolus sagemon* (Fig. 58 & 59), *Coryda alauda* (Férussac, 1821), *Emoda, Polymita picta nigrolimbata,* and *Polymita picta roseolimbata.* The Yumuri River is the published boundary between the known ranges of *Polymita picta nigrolimbata* and *roseolimbata*, but I found them both west of the river.

**Santiago de Cuba**

The drive from Cabacu to Cajobabo on the south coast is one of contrasts. The road south from Cabacu is steep and winding through tropical forests but, after crossing the summit (Alto de Catilla), it enters a very arid area. The south coast to Santiago de Cuba is a desert with cactus. It is also the locality of *Polymita picta picta,* but unfortunately there was no time for collecting.

**8-SUMMARY**

My collecting verified the literature accounts that *Liguus* and *Zachrysia* are the most widely distributed genera of large shells in Cuba. I did not see any live *Liguus* specimens in the trees. The guide at Belen had live specimens collected during the wet season.

The *Cerion* observed on the north coast coincide with the morphotype concept of Gould and Woodruff (1986). According to them the coarse-ribbed species is found coastally adjacent to deep marine water and the fine-ribbed or smooth and mottled or unmottled forms are found adjacent to shallow marine water. I found coarse-ribbed *Cerion* species at Havana adjacent to deep water and smooth-ribbed at Cayo Sabinal, Cayo Coco, and Cayo Paredón Grande adjacent to shallow water. Unfortunately, I found no *Cerion* on the south coast at Zapata, Cueva de Peses, or Trinidad.

I interested at least one of my traveling companions in snails. He sketched several snails for me. I think my trips to Cuba are best summarized by a sign in Baracoa which says, "!Salvemos las Polymitas!" (Save the Polymitas!) (Fig. 61).

I was scheduled for a 10-day visit to Eastern Cuba in October, 2003, but the U. S. Treasury Department refused to issue a visa and the trip was canceled. Since then travel to Cuba has been severely restricted.

**Aguayo, Carlos G. & M. L. Jaume.** 1945. "Novedades malacologicas Cubanas," Revista de la Sociedad Malacologica "Carlos de la Torre," 3(3):95-98.

**Binney, W. G.** 1865. "Land and Fresh-water Shells of North America, Part III, etc." Smithsonian Miscellaneous Collections 144, pgs viii-120.

**Espinosa, José & Jesús Ortea.** 1999. "Molluscos terrestres del archipiélago cubano," Avicennia, Suplemento 2:1-137.

**Gould, Stephen J. & David S. Woodruff.** 1986. "Evolution and Systematics of *Cerion* (Mollusca: Pulmonata) on New Providence Island: A Radical Revision" in Bulletin, American Museum of Natural History, Volume 182: Article 4:389-490.

**Torre, Carlos de la & Paul Bartsch.** 1938. "The Cuban operculate land shells of the subfamily Chondropominae" in Proceedings of the U. S. National Museum, 85(3039):193-403.

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# SCUM X: Southern California Unified Malacologists

by Lindsey T. Groves


**Front Row (left to right, seated): Shawn Wiedrick, Doug Eernisse.** **Photo by Wes Farmer**
**Second Row (left to right): Bob Sinclair, Scott Rugh, Carole Hertz, Jules Hertz, LouElla Saul, Tony Phillips.**
**Third Row: Bob Stanton, Phil Liff-Grieff, Paul DeFlorio, Paul Valentich-Scott, Daniel Geiger, William Hewson, Albert Rodriguez, Alvin Alejandrino, Christina Fernandez, Mike Vendrasco.**
**Fourth Row: John Ljubenkov, Lance Gilbertson, Henry Chaney, Jim McLean, James Weaver, Kent Trego, Brandon Lincicum, Lindsey Groves, Curtis Cash, Chuck Powell II, George Kennedy, John Alderson.**
**Not in photo: Don Cadien, Wes Farmer, Lauren Forest, Jeff Goddard, Eric Hochberg, Jay Shrake, Carla Stout, Ángel Valdés, Ron Velarde.**

Thirty-nine professional, amateur, and student malacologists and paleontologists attended the 10th annual gathering of Southern California Unified Malacologists (SCUM) in Farrand Hall at the Santa Barbara Museum of Natural History, Santa Barbara, California, on Saturday, January 21st, 2003. This informal group continues to meet on an annual basis to facilitate contact and keep members informed of research activities and opportunities. In keeping these gatherings informal, there are no dues, officers, or publications. It is hoped that the continuing success of informal groups such as SCUM, Bay Area Malacologists (BAM), and Mid-Atlantic Malacologists (MAM) will encourage other regional groups to meet in a similar manner.

SCUM X was hosted by Daniel Geiger who welcomed the group and updated everyone on recent happenings. After introductions all SCUM attendees were given the opportunity to present current mollusk related research and/or activities. Most presentations were informal but several were more detailed. Of particular interest were a key to southern California aplacophoran species presented by Don Cadien and updates on upcoming identification guides by Paul Valentich-Scott (Panamic bivalves) and Jim McLean (North Pacific shelled gastropods). A guided tour of the SBMNH facilities, including the wet and dry collections, the molecular lab, and the SEM, was conducted for interested parties. A current exhibit, *Extreme close-ups,* features many SEM mollusk images. SCUM XI will be hosted by Scott Rugh of the San Diego Natural History Museum, Department of Paleontology in January of 2007.

**SCUM X participants and their respective interests and/or activities:**

**John Alderson** (Nat. Hist. Mus. L.A. Co., Res. Assoc.): Researching Miocene mollusks of the western Santa Monica Mountains, California, from the Topanga Formation and Conejo Volcanics complex with Bob Stanton. John is also interested in Cretaceous mollusks of southern California.
**Alvin Alejandrino** (Calif. St. Univ., L.A.): Researching the phylogeny of aeolid nudribranchs for his master's degree.

**Don Cadien** (L.A. Co. Sanitation Dist.): Continues monitoring programs. Recently interested in aplacophorans, prompting the creation of a detailed key. He presented images of many southern California species and in particular the strange aplacophoran radula.
**Curtis Cash** (City of Los Angeles): No report.
**Henry Chaney** (Santa Barbara Mus. Nat. Hist.): Continues research on gastropods of the Indo-Pacific.
**Paul DeFlorio** (Jet Propulsion Lab, Pasadena, CA): Shell collector.
**Doug Eernisse** (Calif. St. Univ., Fullerton): Researching chitons of the *Mopalia* "species flock" using morphological and molecular techniques. Submitted chiton chapter for upcoming revised *Light's Manual* and is describing seven new species of *Henricia* seastars.
**Wes Farmer** (San Diego, California): Participated in fishing trips off LaJolla, California, and Bahía de los Angeles, Golfo de California, Mexico, to catch Humboldt squid.
**Christina Fernandez** (Santa Barbara, CA): Recently completed master's degree.
**Daniel Geiger** (Santa Barbara Mus. Nat. Hist.): Research on worldwide scissurellid gastropods using molecular and histological techniques. Operates the scanning electron microscope (SEM) at SBMNH.
**Lance Gilbertson** (Orange Coast College): Retired from teaching; researches helminthoglyptid land snails from the SW United States.
**Jeff Goddard** (Univ. Calif. Santa Barbara): Continues research on invasive marine species in California.
**Lindsey Groves** (Nat. Hist. Mus L.A. Co.): Research on fossil cowries, including a new species of *Muracypraea* from Peru, three new Eocene species of *Eocypraea* from the Pacific slope, and a new Eocene *Bernaya* from Washington. Working on earliest known abalone (Late Cretaceous of Los Angeles County) with John Alderson and the companion volume to Keen & Bentson's (1944) *Check List of California Tertiary Marine Mollusca*.
**Carole Hertz** (San Diego Shell Club): Editor of *The Festivus* (San Diego Shell Club publication).
**Jules Hertz** (San Diego Shell Club): Business Mgr. for *The Festivus*.
**William Hewson** (Calif. St. Univ., Fullerton): Researching the phylogeography of the limpets *Lottia strigatella* and *L. paradigitalis*.
**Eric Hochberg** (Santa Barbara Mus. Nat. Hist.): Research on cephalopods of the eastern Pacific.
**George Kennedy** (Brian F. Smith & Assoc., Poway, CA): Research of Pleistocene marine terraces of California. George displayed several lithographs of original artwork from a new book *Fossil Treasures of the Anza-Borrego Desert*.
**Phil Liff-Grief** (Pacific Shell Club): Reported on a trip to Israel where numerous species of endemic land snails were collected.
**Brandon Lincicum** (Calif. St. Univ., Fullerton): Researching the phylogeography and larval aquaculture of *Argopecten* spp. from the Gulf of California to Carlsbad, San Diego Co., California.
**John Ljubenkov** (Pauma Valley, California): Independent consultant and self proclaimed "industrial taxonomist."
**Jim McLean** (Nat. Hist. Mus. L.A. Co.): Continues work on his eagerly anticipated volumes on North Pacific shelled gastropods and the gastropod section of the revised edition of *Light's Manual*.
**Tony Phillips** (L.A. Co. Sanitation Dist.): Continues monitoring programs and is also amongst the ranks of "industrial taxonomists." Active Southern California Association of Marine Invertebrate Taxonomists (SCAMIT) member.
**Chuck Powell II** (U.S. Geological Survey): Research on Neogene and Quaternary mollusks of California.
**Albert Rodriguez** (Calif. St. Univ., Fullerton): Research on whether or not the Palos Verdes Peninsula, Los Angeles Co., California, is a genetic barrier for selected species of chitons and limpets.
**Scott Rugh** (San Diego Nat. Hist. Mus.): Reported on similar faunas from the Late Miocene/early Pliocene Imperial Formation of southern California and modern faunas of the Panamic and Caribbean provinces. This notion was highlighted in the invertebrate chapter of *Fossil Treasures of the Anza-Borrego Desert* co-authored by Scott and Thomas Deméré.
**LouElla Saul** (Nat. Hist. Mus. L.A. Co., Res. Assoc.): Research on Cretaceous mollusks with Richard Squires, particularly the volutid genus *Volutoderma,* and working on a long anticipated volume on the invertebrates of the Miocene Topanga Formation.
**Jay Shrake**: Web master for Southern California Association of Marine Invertebrate Taxonomists (SCAMIT).
**Bob Sinclair** (Nat. Hist. Mus L.A. Co): Volunteer for the LACM Malacology Section and assisting Jim McLean with his North Pacific shelled-gastropod book. Interested in bivalves.
**Bob Stanton** (Nat. Hist. Mus. L.A. Co., Res. Assoc.): Working with John Alderson on molluscan faunas from the Miocene Topanga Formation of the western Santa Monica Mountains, Los Angeles County, California, which interfingers with the Conejo Volcanics. This stratigraphic relationship yields a hard substrate molluscan fauna that lacks infaunal species.
**Carla Stout** (Calif. Poly., Pomona): Researching the phylogeny of west coast *Dendronotus* nudibranchs for her master's degree.
**Kent Trego** (San Diego Shell Club): Reported on abyssal holothurians (Echinodermata) from off Pt. Conception, Santa Barbara Co., California.
**Ángel Valdés** (Nat. Hist. Mus. L.A. Co.): Phylogenetic research on opisthobranch gastropods of the Caribbean and Panamic provinces.
**Paul Valentich-Scott** (Santa Barbara Mus. of Nat. Hist.): Update on preparations for a much anticipated book with Eugene V. Coan on subtidal to abyssal Panamic bivalves. This identification guide will follow the format of their NE Pacific book but will feature many color illustrations.
**Ron Velarde** (City of San Diego): Offshore monitoring projects of benthic invertebrates from 10 to 200 meters, between Pt. Conception, Santa Barbara Co., California, to the Mexican border. Another of the "industrial taxonomists."
**Mike Vendrasco** (Univ. Calif. Santa Barbara): Continues research on fossil and Recent chitons.
**James Weaver** (Univ. Calif., Santa Barbara): Interest in molluscan biomineralization processes.
**Shawn Wiedrick** (Pacific Conchological Club): Current vice-president of the PCC and interested in all areas of shell collecting. Shawn was accompanied by friend **Lauren Forest.**

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# Multiplying *Monadenia* Snails

## by Lisa Ross (photos by author)

The adventure started in November 2004 when we visited the northern California coast near Crescent City and Fern Canyon. At a spot called Gold Bluffs campground we spotted the prettiest land snail. It was just lounging among dead grass and sand some 100 yards from the surf and next to the fire pit. The shell was black with bright yellow spiral bands and it measured 21mm. I was pretty sure it was a *Monadenia*, but what species? Overcome by curiosity, I decided to bring it home to Redding. I made a little terrarium for it, equipped with sand, grass, and wood chips from the immediate area where it was found. I wanted the snail to feel at home.

**Lisa's adult *Monadenia infumata callidina* Berry 1940 (21mm) from the northern California coast. This snail is in the New World family Xanthonychidae, subfamily Helminthoglyptinae. Adults can grow to 40mm. Another well-known snail in this family is the colorful Cuban snail *Polymita picta* (Born, 1778) (see the article on Cuban snails by Neil E. Fahy on page 22).**

Once home, I made a bigger terrarium using the closest materials I could find to the spot where it was collected. Its chocolate brown silky foot could stretch to 4cm and it was willing to walk on my hand, unafraid. I admired it and proudly showed it to my friends who showed varying levels of enthusiasm for another pet snail. Since this was now my third terrarium with wild snails, nobody was really surprised. Bill Laurin, a friend, pretended to be really grossed out by the snail, which I promptly named Bill, in his honor. When Dan and Hiromi Yoshimoto visited, I learned my snail was *Monadenia infumata callidina* Berry 1940.

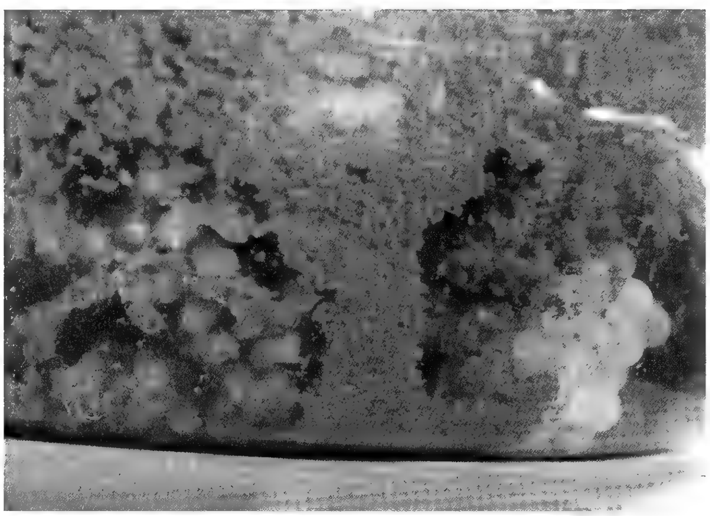
Bill (the snail, not my friend), had a great appetite and seemed to be very active compared to other local California *Monadenia* and *Helminthoglypa* I have collected and maintained. Like all pulmonates, he had two sets of tentacles. The uppermost pair has eyes at the distal ends. He frequently watched me watching him. Lacking an operculum, he created a watertight film as a trapdoor to aestivate. He rested this way between meals, but spent much of his time exploring and eating. He barely munched tomatoes and celery, preferring to chow down on hothouse cucumber slices. He ate a ½ inch cucumber slice every 2 days. He also liked lettuce, melon, strawberries and fungal-rich detritus from the forest floor. He ate crushed eggshells and chalk for a calcium supplement. I was amazed he had such a healthy appetite. At only 21mm, he was quite robust. He seemed very content for the first couple weeks of captivity, but he then became restless. He would travel from the top to the bottom of his terrarium and back again. Have you ever seen a snail pacing? I assumed this was not typical behavior. I reassured Bill that I would take him back to his real home and release him as soon as possible. By now the mountain passes were getting some snow and there would be no visits to the coast until spring. Bill would just have to settle for a terrarium and spending the winter in Shasta County.

Precisely 3 weeks from the date we collected him, he gave us a big surprise. Overnight he burrowed into the soft sand in the corner of his terrarium and laid a clutch of eggs against the glass. He covered them with sand and wood chips, leaving a dimple on the surface of the soil. There were at least 25 perfectly round 1.5mm shiny pearls. That's a lot of eggs for a quarter inch snail! The next week, he laid another clutch of eggs, then a third clutch exactly one week later. Apparently, the snail felt very much at home. How could one snail lay so many eggs? Pulmonate snails are hermaphrodites. Each snail possesses both male and female sex organs. Tucker Abbott's *Compendium of Landshells* states, "self-fertilization is possible only in rare instances." (Abbott, 1989:7) I had only the one snail, so I doubted that any of the eggs could be fertile. Bill was definitely outgrowing his small home by this time and I thought I ought to do something about his-her name. I moved him-her to a large peanut butter jar with more fresh sand, dead grass, and wood chips. I also changed his-her name to Billita. The snail never missed a beat. She (this seems the most comfortable pronoun) laid three more clutches of beautiful pearly white eggs, six separate clutches in all. Each time she dug a 1 1/2 inch deep hole at a 45-degree angle and cleared a smooth air pocket against the glass. There were generous air pockets surrounding all of the clutches. Billita's appetite was now explained, she had actually laid more than her weight in eggs!

I diligently kept the terrarium moist and clean. Billita had a lung for breathing but still needed moisture to survive. I regularly

**Above: Newly laid eggs in Lisa's snail vivarium with "Billita" just emerging from the nest chamber. Note the well-eaten cucumber slice.**

**Below: Eggs and hatchlings in two separate nest chambers.**



**Above: Adult and 2mm hatchlings.**

misted the terrarium with a water spray bottle. The first three clutches were swamped with water and never hatched. On Jan. 20th I noticed the eggs had lost their luster. The next day, the eggs laid on Dec 29th all hatched. I could see the tiny translucent snails in their little air pocket. They were perfect miniatures of Mom. After six days they made their way out of their little air pocket under the sand. All 37 had translucent shells with one whorl. The new snails were 1-1.5mm. They may have eaten their eggshells or egg sacs while living in the sand 6 days. They were already plenty hungry and had some cucumber. A second clutch of 29 also hatched, and then a third. I was beginning to feel lucky that only 3 of the 6 clutches hatched. I separated most of them from their parent in case she decided to eat them. She ignored them completely.

I was gone a couple weeks visiting family in Chicago. When I returned, I was amazed to find more new snails. The seventh and eighth clutch had been laid in the middle of the sandy terrarium unseen. They were eating me out of house and home. It was now April and high time to plan a trip with the snails back to Humboldt County. I kept 3 babies from each clutch to monitor their progress.

Over the mountains we traveled with Billita and 100 plus little snails. We camped for two nights near Carlotta at Grizzly Creek. Then we drove north to the place where the original snail was collected. As we walked through the misty redwood forest, Billita became alert. She hugged the screen at the top of the terrarium.

It was sad for me to release my beloved snail. She had amused, entertained, and educated me. I had come to love them all. I had learned a lot in the last six months since first collecting Billita. I knew I couldn't properly care for my growing snail family. They had to be turned loose. We looked around quite a bit before settling on a location with wild strawberries nearby. When I shook the sandy dirt from the terrarium, I found Billita had laid a tenth clutch in the last couple days. My husband Ray reassured me they would find food and be better off in the wild. I made a scrapbook of all the best snail pictures to show at the shell club meeting.

Upon returning home to Redding, it was heartwarming to find Billita's last clutch of eggs had hatched. New baby snails again! There was one more surprise awaiting us. The 11th clutch, previously unseen, hatched and came out 3 weeks later. She laid an amazing 11 clutches in six months. Once again I was overwhelmed with 70 snails. Luckily none of them are old enough to lay eggs.

In May, we made another trip to the snail's homeland. We released another 63 baby snails. No sign of the first snails we released at the site. They must have been tucked away nearby, waiting for the night to forage for food. My friend, Barbara Snell, found a beautiful *Monadenia infumata callida* while walking in the forest near her Trinidad, California, home. Her snail was a whopping 3cm, half again the size of Billita. I still have 7 little snails at home. At six months, the babies reached 21mm. Though the same size as their parent, they lacked the flared lip of a mature landsnail. I plan to release them all eventually. I'm watching, measuring and photographing them in the meantime to determine how old they are when they reach maturity and lay their own eggs.

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# Artistry of Steven Counsell

### by Tom Eichhorst

The artist of the shell inspired paintings on this page and the back cover is Steven E. Counsell of Santa Fe, New Mexico. Steven was born in Minnesota, but grew up in New Mexico. He left the state for school and to soak up what Europe had to offer, but moved back to New Mexico and settled in Santa Fe in the 1990s. As he puts it, "When my ambitions as a musician collapsed, when my father collapsed, when my desire to be a hippie collapsed, when art school collapsed, when my attempt to be a modern artist (to whit conventionally abstract) collapsed, when, when, when…" Somewhere in those "when's" he met and married wife Hope Reed and embarked on the path that led to the wonderful paintings you see here. His Black Swan Art Studio in downtown Santa Fe offers the public his unique way of looking at and expressing the world around him. His art encompasses much more than seashell images, but it was his shell art that first caught my eye.

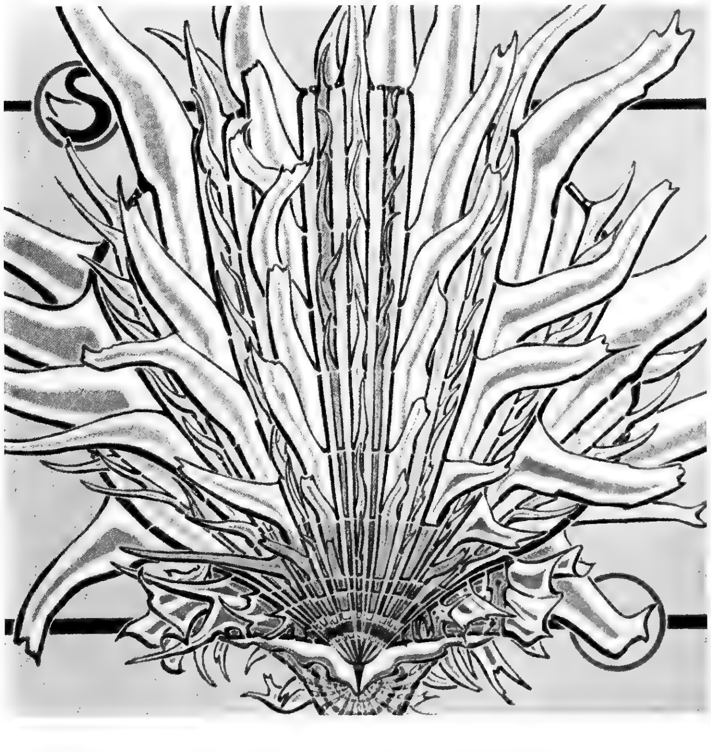
Steven works in pen & ink, mixed media, pastels, watercolor, egg tempera and other media. Most of the images presented here are washed ink and watercolor. More wonderful examples of Steven's work can be found on his web site at: http://www.blackswanartstudio.com.

If you are visiting Santa Fe, make sure you contact Steven to arrange a private showing of his original artwork. The pieces displayed here are also available as limited prints. Steven may be contacted at: blackswan@cybermesa.com or:

Black Swan Galleries
321 W. Cordova Road
Santa Fe, NM 87505
Phone (505) 982-8814

Below: "Urn No. 1, Zebra Nerite," (*Vittina cumingiana*).

Above: "Heart No. 5, Fluted Tridacna," (*Tridacna squamosa*).
Below: "Heart No. 1, Spiny Oyster," (*Spondylus americanus*).

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thomas@rt66.com http://conchologistsofamerica.org

# American CONCHOLOGIST

Quarterly Journal of the Conchologists of America

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 34, No. 2 June 2006**

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***



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**Front cover: *Babelomurex hirasei* Shikama, 1964 (40mm) from the collection of COA member Marilyn Northrop. This shell was clearly a standout in her Coralliophilidae display and she graciously lent it for a cover photo (see related story on page 20).**

**Back cover: A painting by Jan Huijbers of New Zealand (see story on page 35). The colors and pattern of this painting, entitled "Shell pattern - 0006, *Neritina communis* [sic]," are those found on *Vittina waigiensis* (Lesson, 1831). *Neritina communis* is a synonym. Jan's wonderful art is not limited to shell designs, but it is mostly concerned with the ocean and ocean themes.**

## Jordan Star's Web Picks

The Tree of Life Web Project, **http://tolweb.org/tree** This web site was mentioned in an American Conchologist article on *Spirula*. There is actually much more there, including lots on evolution and, if you dig deep enough, information on gastropods, bivalves, chitons, tusk shells, etc. Pictures with scientific names only. Can be tricky to navigate but stick with it for some interesting material.

Kings County Library, Homework Help, Mollusks & Seashells, **http://www.kcls.org/hh/seashells.cfm** A site for kids, but also helpful to new collectors. Young people will keep our hobby going, and this site can help. Lots of helpful links, including one to the COA website. Kings County is in the Puget Sound area of Washington.

Treasures From the Sea, **http://www.kidspoint.org/columns2.asp?column_id=540&column_type=kpfun** Another kid's page I came across. It has a long URL, but when you get there you will find many helpful links, including the Marine Museum of Virginia Beach web site, All About Seashells, and COA. Excellent site for teachers and students.

Shell collecting, Encyclopaedia Britannica, **http://www.britannica.com/eb/article_9067255** An encyclopedia informational article with links to other articles. To get other articles, a free trial is required. The information in the hard copy version is quite extensive with superb color plates. I do not know if the online-for-pay version is as nice.

Shell Books and other items for educators, **http://www.eduresources.net/life/sealife/bls50.htm** A commercial site, limited shell books and other shell items.

Conchologists of America home page, **http://www.conchologistsofamerica.org** If you haven't looked at our own web site in a while you might be surprised. It has lots of great material and is worth a visit. Our web master is Carlos Henckes from Brazil and he is doing a great job.

Links good, 6-15-06

# A Fresh Look at *Conus milneedwardsi* Jousseaume, 1894, and *Conus bengalensis* (Okutani, 1968)

By Michael Tove

Among the family Conidae, few shells are more famous and desirable than the three species of Indopacific "Glory Cones": *Conus gloriamaris* Chemnitz, 1777 ("Glory of the Seas"), *C. bengalensis* (Okutani, 1968) ("Glory of Bengal") and *C. milneedwardsi* Jousseaume, 1894 ("Glory of India"). In a family normally wrought with confusing species, subspecies and form names, the former two species have enjoyed surprising simplicity (one species, one name). The same cannot be said for the latter.

As a species *C. milneedwardsi* is recognized as occurring from Thailand and India, west to the Gulf of Aden and south to the Madagascar Strait and Reunion Islands. In addition, there is an isolated population in the China Sea and off southern Japan. Up to four different form names are used to describe the different geographic populations of this species. There is, however, confusion and disagreement as to how some of these form names are applied and even whether these different populations represent subspecies or full species. The purpose of this article is two fold:

1) Offer collectors and dealers a unified guideline of how specimens are identified in an effort to reduce the confusion and inconsistency that currently exists.
2) Provide biologists some potentially significant observations that could serve as working hypotheses for future biogeographical and taxonomic investigation.

Before proceeding, a word about nomenclature is required. Specimen shells are often identified by subspecific names. Biologically speaking, a subspecies represents a distinct population that, while sufficiently isolated reproductively, is not sufficiently different from the "main" species to justify elevation to species level itself. In a formal sense, a subspecific epithet (e.g., *Conus milneedwardsi clytospira*) refers to an actual population, biologically distinct from all other populations in the species (*C. milneedwardsi*). Historically, naturalists described taxa based on physical attributes of a limited number of specimens from a single locality. In many cases, the same species (or subspecies) from slightly different locations or exhibiting slightly different individual variation, received different taxonomic identities. This practice continues today. Obviously, collectors enjoy this nomenclatural multiplicity because it means named micro-variations can justify multiple additions to their collection. While there is nothing wrong with collecting color or geographic variants and offering them identity names, the use of formal scientific names for this purpose creates confusion by implying a biologically significant taxon exists when that may not be the case. Therefore, in this article the use of subspecific epithets has dual meaning. The use of subspecific names in quotes (" ") refers to visually identifiable forms only and does not necessarily imply biological significance. Without the quotes, those same names refer directly to named biological subspecies.

The most comprehensive popular works on Indopacific cones are Walls (1979) and Röckel, Korn and Kohn (1995). Both of these references cite the nominate (hereafter nom.) form of *C. m. milneedwardsi* as occurring in the western Indian Ocean, principally from the Gulf of Aden south along the east coast of Africa, with a second form, designated *C. milneedwardsi clytospira* Melvill & Standen, 1899, from India to Thailand. According to the literature, nom. *milneedwardsi* attains much larger sizes (e.g., to 174mm, Walls and Röckel et al.) than *clytospira*, which does not exceed about 110mm (Rockel et al.). Contrary to this paradigm, a look at any online dealer's page shows the largest shells are from India and usually are called "*clytospira*" while specimens from eastern Africa do not attain those sizes and are generally called nom. "*milneedwardsi*". To make matters worse, some specimens listed as nom. "*milneedwardsi*" appear identical to those called "*clytospira*" while other specimens that look radically different are identified by the same name. Seemingly, most dealers make these identifications by geographic origin alone without regard to the shell's appearance.

**Fig. 1 *Conus milneedwardsi milneedwardsi* Jousseaume, 1894: (left) 115.4mm, off Somalia; (right) 83.7mm, 25km south of Durban, South Africa, coll. M. Tove.**

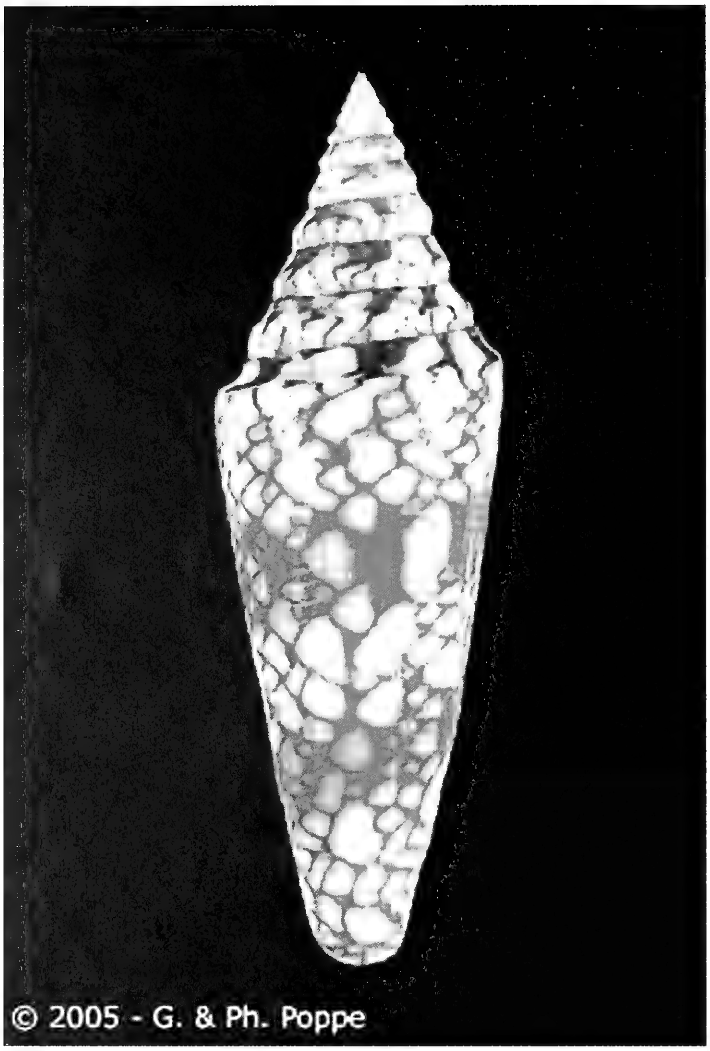
**Fig. 2 *Conus milneedwardsi clytospira* Melvill & Standen, 1899: (from left to right) 175.6mm, off Madras, India; 170.1mm, off SW India; 155.8mm, Laccadive Island, western India; 143.2mm, off SW India; 124.8mm, off SW India, coll. M. Tove.**

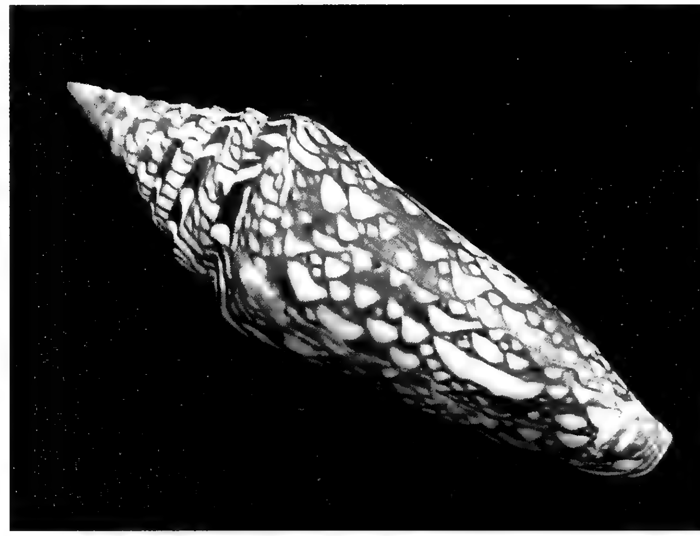
To get a handle on the *C. milneedwardsi* group, one must first temporarily strip away the formal names and look at the shells themselves. Since the original holotype was from the Gulf of Aden, that seems a logical place to start. The vast majority of shells that occur from the Gulf of Aden south along the east coast of Africa (form #1) are represented by a tall spired shell reaching a maximum length of about 118mm (Walls) to 119mm (Lim and Wee, 1992). The body whorl consists of two to three isolated reddish brown bands on a white background that is overlaid by thin reddish zigzag lines defining white rhomboids. In contrast, the typical shells from India to Thailand (form #2) are represented by specimens that attain much larger sizes. The current world record is 184mm (Pisor, 2005) with specimens in the 150 to 170mm range regularly offered for sale. The body whorl consists of a pattern of one to three broad reddish brown bands separated by paler bands defined by a profusion of white rhomboids. The essential differences between these forms are maximum size and the appearance of these pale bands. In form #1, these broad bands are essentially white overlaid by dark lines set off by rhomboid tents. In form #2, these bands are essentially dark and overlaid by white rhomboids.

A search of the literature plus scores of offerings from various dealers reveals that most specimens can actually be assigned, *visually* (by pattern and size), to either form #1 or form # 2. Looking then at the geographic ranges of those two forms, the following observations are made: Shells matching form #1 occur from western India (rarely) westward to the Gulf of Aden and (most abundantly) along the east coast of Africa south through the Mozambique Channel. Shells matching form # 2 occur from the Mozambique Channel (rarely) north to the Gulf of Aden and Red Sea, and most abundantly, eastward to India, Sri Lanka and Thailand.

Because the holotype of *C. milneedwardsi* (from Aden) matches form #1 and that of *C. m. clytospira* (from India) fits form #2, shells matching those respective forms should retain their currently associated names. This conclusion reverses the present understanding of maximum sizes, meaning "*clytospira*" rather than nom. "*milneedwardsi*" is the larger form. Considering their broad overlapping ranges from the Mozambique Channel to western India, I propose that specimens pertaining to these two types be identified by their *physical appearance* only and not based upon where they were collected.

The *C. milneedwardsi* complex includes two additional "subspecies," both of which are known as island populations at the ends of the species's range. The first, restricted to the Reunion Islands, is called *C. m. lemuriensis* Wils & Delsaerdt, 1989. In size and pattern, this form most resembles form #1 (nom. "*milneedwardsi*") although the white rhomboids seem larger and



**Left - Fig. 3 Form #1 (nom. "*milneedwardsi*"): 58.9mm, from India, photo courtesy Guido & Philippe Poppe of Conchology, Inc., www.conchology.be.**

**Above - Fig. 4 Form #2 ("*clytospira*"): 112.5mm, from Zanzibar, Africa, photo courtesy Ross Mayhew of Schooner Specimen Shells, www.schnr-specimen-shells.com.**

**Below - Fig. 5 *Conus milneedwardsi lemuriensis* Wils & Delsaerdt, 1989: 95.6mm, from Reunion, photo courtesy of Philippe Quiquadon of Shells Passion, www.shellspassion.com.**

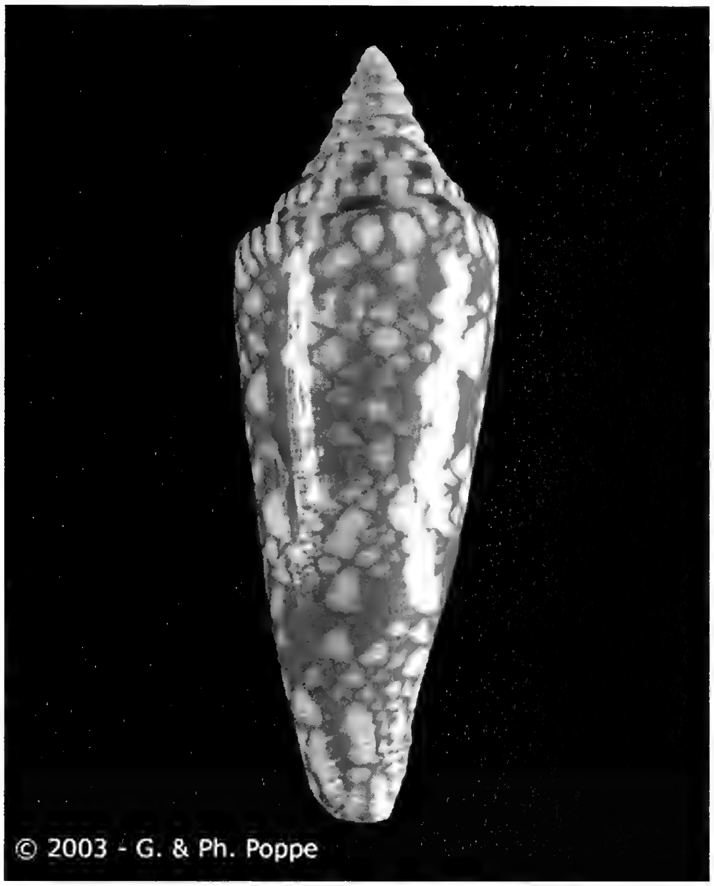
fewer in number and the spire tends to be more stepped. Spire form and height in the species are sufficiently variable that relying on this attribute to identify an individual specimen seems risky.

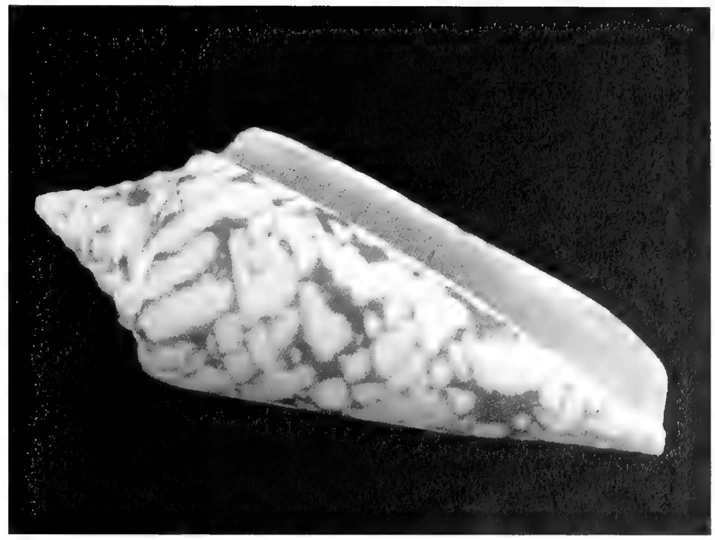
At the far eastern end of the range is an oddity. As a species, *C. milneedwardsi* (including all subspecies/forms) enjoys a continuous distribution across the western and northern Indian Ocean. Its range is then interrupted for nearly 3000 miles before reappearing in the China Sea and off southern Japan (i.e., NW Pacific Ocean) as *C. m. kawamurai* Habe, 1962. The majority of specimens here are smaller (e.g., well under 100mm), shorter spired, and have distinctive body whorl markings. This pattern is best described as consisting of two broad, ill-defined dark bands overlaid by a pattern of well separated white rhomboids.

Overall, the four forms of *C. milneedwardsi* seem to exhibit a clinal pattern from southwest to northeast as follows: The south westernmost population ("*lemuriensis*") is the whitest with the largest rhomboid bands that become progressively darker to the north (nom. "*milneedwardsi*"), and farther east ("*clytospira*") and finally, with the darkest shells (*"kawamurai"*) at the northeastern end of the range.

If it were only that simple, life would be great - but alas, it's not the case.

While *most* of the specimens off southern Japan (*"kawamurai"*) are typical of the above description, some are not.



**Left - Fig. 6** ***Conus milneedwardsi kawamurai*****: 62.2mm, from Ryukyu Islands, Japan, photo courtesy Guido & Philippe Poppe of Conchology, Inc., www.conchology.be.**

**Above - Fig. 7** ***Conus milneedwardsi kawamurai*** **Habe, 1962: 63.5mm, from Ryukyu Islands, Japan, courtesy Ross Mayhew of Schooner Specimen Shells, www.schnr-specimen-shells.com.**

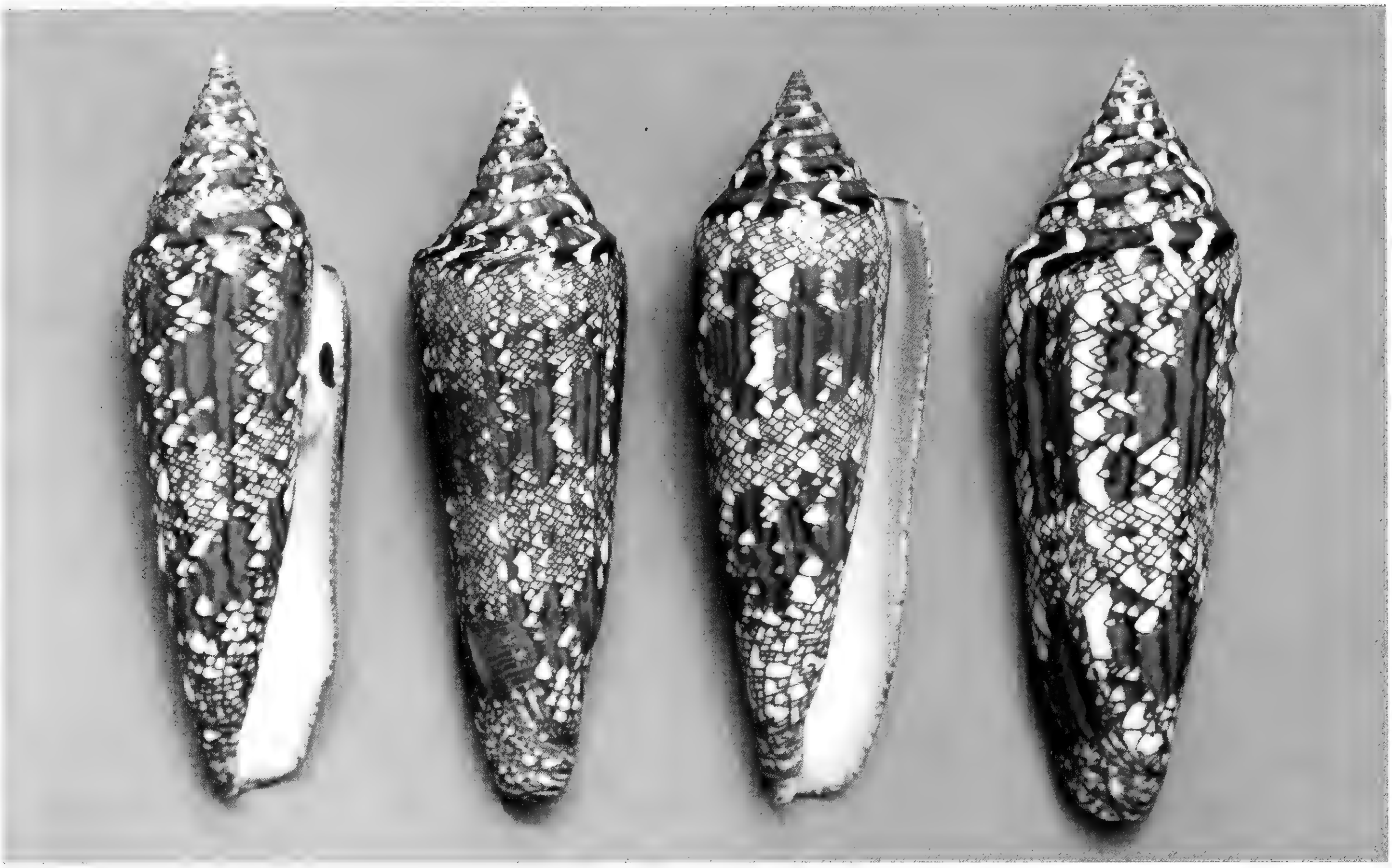
**Below - Fig. 8** ***Conus*** **(*****bengalensis*****)** ***eduardi*** **Delsaerdt, 1999: 65mm, Dahlak Island, Red Sea, (fig. 4, plate 69 in Rockel Korn and Kohn) reprinted courtesy Conch Books 55546, Hackenheim, Germany, www.conchbooks.de.**


Surprisingly, a significant minority closely resembles the shells off eastern Africa (nom. "*milneedwardsi*") and Reunion ("*lemuriensis*") including some of the whitest specimens I have seen (see Röckel et. al.). In addition there is a non-clinal size relationship with the largest specimens in the middle of the range ("*clytospira*") and the smallest at the ends ("*lemuriensis*" and "*kawamurai*").

Moreover, a Red Sea population, *Conus eduardi* Delsaerdt, 1996, was first likened to "*kawamurai,*" then *C. bengalensis* (Röckel et al.), but has most recently been elevated to full species status (Delasaerdt, 1996). Delsaerdt's description seems based on a single specimen and the entire species is apparently known from five specimens: two adult, two juvenile and one unspecified. Röckel et al. illustrated an adult specimen and tentatively aligned it with *C. bengalensis*. Delsaerdt disagreed, but ultimately Röckel et al. may have been correct. By shape, the two adult specimens certainly resemble "*kawamurai*" more than either nom. "*milneedwardsi*" or "*clytospira,*" but appear even more like the Indian population of *C. bengalensis*. The color pattern, however, seems intermediate between "*clytospira*" and *C. bengalensis*.

*C. bengalensis*, while obviously related to *C. milneedwardsi,* is currently regarded as very distinct; but that does not tell the whole story. *C. bengalensis* is best known from the large number of specimens being taken from western Thailand. These specimens are quite slender and conical with moderate to tall spires. Superficially, the body whorl pattern resembles "*clytospira*" but consists of much smaller tents and may include black wavy axial lines that underlie the tenting pattern. It seems *bengalensis* also occurs off India. Those shells are much broader and proportionally shorter-spired, making them look more like the shorter-spired members of "*clytospira*" (and for that matter, "*kawamurai*"). In pattern they are indistinguishable from the Thai specimens, but the shape seems consistently different.

At this point, a reconsideration of *C. eduardi* is appropriate because "*eduardi*" may better fit in a cline with *C. bengalesis* than with *C. milneedwardsi* (and 2 adult specimens are too few to justify describing a full species). Compared with the Indian *bengalensis* the pattern of "*eduardi*" is lighter with more open tenting and specimens are possibly shorter spired. Thus, *bengalensis* clines form a more slender and somewhat darker form at its



**Above - Fig. 9 The more slender Thailand form of *Conus bengalensis* (Okutani, 1968): (from left to right) 116.4mm and 113.5mm, Andaman Sea, SW Thailand; 113.5mm and 118.2mm Phuket, Thailand, coll. M. Tove.**

**Below - Fig. 10 The robust Indian form of *Conus bengalensis*: (left) 111.5mm, SE India; (right) 124.4mm, off Madras, India, coll. M. Tove.**

eastern boundary (Thailand) to progressively wider, shorter-spired form farther west (India, then Red Sea) and paler at its western end (Red Sea).

From the perspective of shell collecting, if these various forms are recognizable, they should have popular names by which they are consistently marketed and collected. Regardless of the eventual taxonomy, applying those names by appearance rather than geography alone would foster consistency. Accordingly, the following schema is offered: For the *C. milneedwardsi* group, the four current form names are retained and applied as described above with special attention to nom. "*milneedwardsi*" and "*clytospira.*" Those forms specifically should be defined by shell pattern *only* and not geographic origin. By parallel logic, *Conus bengalensis* should be "split" into two forms as follows: slender shells from Thailand could be called nom. "*bengalensis*" while the wider Indian form receives a "robust" designation. The more robust Indian form has a discernibly more ovate body whorl that averages about 15-20% wider than the nominate form.

A confusing factor is that the two forms seem to form an abundance cline where they overlap in range, but the narrow form is most common in the east (e. g. eastern Andaman Sea) and least common in the west, while the robust form most common in the west (e.g., western Andaman Sea) and least common in the east.

Finally, the paler Red Sea form might, at least for now, better be considered *C. bengalensis* form "*eduardi*" rather than retaining its status as a full species.

While this article does propose specific nomenclatural uniformity in the hobby world, I must caution that these conclusions are *not* to be confused with a formal taxonomic revision. That would require a much larger sample size than I had available and,

more importantly, should include DNA analysis. That said, I believe there are fundamental principles of population biology that cannot be ignored:

1) Different subspecies of a single species cannot maintain overlapping ranges and separate identities.
2) Individual variation within a subspecies cannot exceed the variation between different subspecies of the same species.
3) Within a single subspecies, individual variation may be substantial.
4) Across a large geographic range, transitional ("clinal") changes in a species are possible such that members from the ends of the range may appear very different from each other without a definable midpoint where one subspecies stops and the other starts.

Biologically speaking, these seven (current) taxa seem to represent two species, both exhibiting clinal variation on a predominantly east-west axis and sharing a transitional (intermediate) form ("*eduardi*") in the Red Sea. It suggests that *C. milneedwardsi* and *C. bengalensis* are closely related sister species. It further raises some doubt as to the biological validity of four recognizable subspecies in *C. milneedwardsi.* Most troubling is the variation in "*kawamurai.*" That this population includes specimens that run the full spectrum of variation in the species contradicts the viability of multiple subspecies in the species. Nearly as troubling is the large overlapping range of "*clytospira*" and nom. "*milneedwardsi.*" Biologically, two forms exhibiting such an enormous range and overlapping while remaining identifiably distinct, are either variants of the same subspecies or different species. Finally, the maintenance of a unique population (*lemuriensis*), adjacent to or even overlapping with the range of nom. *milneedwardsi* seems inconsistent with the high variation and broad geographic range exhibited by the species exhibits as a whole, particularly in light of the "*kawamurai*" situation. Surprisingly, *C. bengalensis,* which currently has no named forms, may offer a more compelling case for naming up to three different subspecies than *milneedwardsi* does with its current four.

One obvious conclusion is that there should be no subspecific identifications and the two species are simply monotypic with a wide range of individual variation. Another possibility is that they represent three species as follows: *C. milneedwardsi* (including "*kawamurai*" and "*lemuriensis*"), *C. clytospira* and *C. bengalensis*. The justification for the *milneedwardsi* and *clytospira* split is the maintenance of their identities over a broad range overlap plus the substantial difference in maximum size of adult specimens. Hypothetically, one could make an ecological argument that the two forms maintain separation by virtue of size differences that permit them to exploit different resources.

While the latter hypothesis may be far more popular with collectors (and dealers), popularity has no place in biology. These hypotheses need to be tested by *bonafide taxonomic investigation* (example, DNA/DNA analysis subjected to a recognized taxonomic model) and <u>not</u> based on 19th century style qualitative descriptions of gross shell (or animal) morphology of a few (or one) selected specimens. In the mean time, we can continue to enjoy collecting these beautiful shells with at least some uniformity as to how individual specimens are identified.

*I thank J. Ross Mayhew for reviewing initial drafts of this article and making many valuable suggestions.*

References:

**Delsaerdt, A.** 1996. *Conus eduardi* A new species from the Red Sea, Gloria Maris 35:57-62.
**Lim. C. F. and V. T. H. Wee**. 1992. Southeast Asian Cones, a seashells book, Seaconus Pte. Ltd., Singapore.
**Pisor, D. H.** 2005 Registry of World Record Size Shells. 4th Edition.
**Rockel, D. W., Korn and A. J. Kohn.** 1995. Manual of the Living Conidae, Volume 1, Indo-Pacific Region, Verlag Christa Hemmen, Grillpazerstr, Germany.
**Walls, J. G.** [1979]. Cone Shells. A synopsis of the living Conidae, T.F.H. Publications, Neptune City, NJ.

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## Call For Manuscripts and Articles

**You will notice quite a few articles in this issue by the editor. This means a lack of articles piled in the corner I could use. I need to build up that pile. Please send in an article on your area of interest or expertise. I can supply images if needed.**







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# COA Convention 2006 – Mobile, Alabama

**By Tom Eichhorst**

The 35th annual Conchologists of America convention was held in Mobile, Alabama, from 31 May to 4 June 2006. There were over 200 attendees and other than a curmudgeon or two, I am sure all had an interesting and fun time. I actually saw Hank Foglino smile at least twice!

Our hotel was undergoing renovations, which provided some "interesting" aspects to the week. At the end of one of the upper floor hallways was a plywood sheet hung as a door. This door was nailed shut, a good idea, as beyond the door was just open space - no stairs, no hallway, no nothing. In counter-balance to the minor inconvenience of the remodeling was a very helpful and courteous hotel staff as well as the wonderful folks working the convention. Doug Shelton was the convention chairperson, but he was only one of several Sheltons that worked long hours, every day. Kids, parents, and grandparents: all contributed to the success of the convention. The Shelton clan was joined by members of the North Alabama Shell Club, the Gulf Coast Shell Club, and some needed help from other COA members who have seen their share of conventions and know how to make things happen correctly. All in all, it was a recipe for success. Thanks to all who made our stay a pleasant one.

**View of the Alabama River from under the bridge on Hwy 84. The Lisbon Formation fossils were in the mud exposed along the river. Photo courtesy of Deborah Mills.**

### Fossil Field Trip

The day prior to the start of the convention was field trip day. Trips scheduled were a freshwater shell collecting trip, a dive trip, a shallow water marine collecting trip, and a fossil collecting trip. The dive trip had to cancel due to insufficient participants. The freshwater shell trip must have gone as planned; I do not know because I was on the FOSSIL field trip. There were other field trips, such as an excursion to the world famous Bellingrath Gardens and one to the Estuarium, but I was on the fossil trip. Because the fossil field trip became a general topic of conversation and hyperbole for many at the convention and because my thighs ached for two days after the trip (did I mention I was on that trip?), I feel it warrants discussion.

Our intrepid leaders were Dr. Andrew K. Rindsberg and Dr. David Campbell. They provided interesting historical anecdotes, humor, and local area expertise on Eocene fossils and early American malacologists Lea and Conrad. A two-hour bus trip brought us to a bridge across the Alabama River on Highway 84 in Claiborne County, north of Mobile. The fossils were located on the banks of the river, down a 700-foot thickly wooded (with thorns and poison ivy), slippery, muddy, and steep (up to 70° at times) embankment.

Those who made it down the slope (not everyone did) were able to collect along the river that was at an extremely low stage. Of course, by the time we reached the river, there were few of us who had not slipped and fallen, resulting in a thorough coating of mud on pants, shirts, whatever. I was one of the fortunate ones who did not fall on the way down the slope. Then, just as I reached the bottom and was thinking (in a rather smug manner), "Boy, it pays to have great skill and coordination," I slipped and went broadside into some slimy river mud. Our leaders warned everyone

***Quadrula pustulosa* (Lea, 1831) with a background of Gosport Sand fossils. Background photo by Harry Lee.**

**Spotted on a river rock was this blue-fronted dancer (*Argia apicalis*). Photo by Lisa Comer.**

**Another visitor to the river was this red-spotted purple (*Limenitis arthemis astyanax*). Photo by Lisa Comer.**

**Three of the land snails found along the overgrown banks of the Alabama River. From left to right: *Inflectarius inflectus* (Say, 1821) 11mm (formerly in the genus *Mesodon*), *Mesomphix cupreus* (Rafinesque, 1831) 15mm, & *Stenotrema spinosum* (Lea, 1830) 14mm. Background photo courtesy of Lisa Comer.**

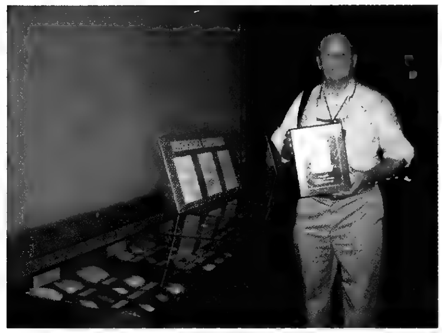
ahead of time, by email or telephone, about the steep and arduous slope, the heavy vegetation, the probability of biting bugs, and the heat. What no one was aware of that day, however, was that the forecast temperature of mid-80s °F was an actual temperature of high 90s °F (with plenty of humidity just for grins).

I found a couple of nice (and very dead) freshwater mussels (*Quadrula pustulosa* Lea, 1831) and a few fossils, including some fossil oysters (*Cubitostrea sellaeformis* (Conrad, 1832)). These last are the size of small (but not all that small) melons and weigh just about what you would expect a rock that size to weigh, a lot. I dumped four in my backpack figuring to keep one and to give the others to anyone who had been unable to fully share and appreciate our adventure. Then I started back up the hill, leaving the fossils of the Lisbon Formation and looking for the fossils in the Gosport Sand Formation.

As I clawed my way uphill I was joined by another intrepid soul who, by his almost total lack of gasping and wheezing, I was able to determine had to be of an age only ½ mine. We missed the Gosport Sand Formation and soon were just trying to get through the vines and thorns to the top. About 2/3 of the way up, those melon-sized fossils began to put on weight and I began thinking it was lucky I could only fit four in the backpack and that really, two would be plenty to bring back. When we finally hit the top (with all four rocks), we realized we were at least a mile from where we had entered the jungle and had a bit of a walk ahead of us to get back to WATER and a seat on the bus. As it turned out, there were two benefits to crawling back up the hill. The first was that the thorns and brush, aside from ripping a 6-inch gash in my jeans and numerous smaller ones on my arms, also scraped away most of the mud on our clothes. The second benefit came about because my face was often only inches from the leaf mold as we were crawling upward (remember, it was fairly steep). This posture meant I was able to see and gather up quite a few land snails in my shaky, thorn-ripped hands.

Dr. Lauck Ward of the Virginia Museum of Natural History provided one of the shining lights to this story. He decided to join the fossil field trip, but figured it would be easier to use a boat and avoid bugs, thorns, vines, mud, etc. He came cruising down the river and was able to pick up folks off the muddy bank and ferry them back to the landing, fossils and all. Of course, they missed the opportunity to collect land snails on the way up the hill. Another light was David Campbell who carried a backpack full of fossils, plus a five gallon bucket full of Gosport Formation sand and fossils, back up the hill for those who had not made it to the river or missed collecting from both sites. Only those who were there would believe the sight of David staggering back to the bus with maybe 100 pounds

**Alan Bennett wins with his "Binary Stars," a *Cypraea* display divided by veliger type.**



**Gene Everson wins with his impressive seven case "Mitriform Mollusks" display.**

**Helen Kwiat with her spectacular *Calliostoma*.**


**Marilyn Northrop with a winning display of Coralliophilidae. Her stunning *Babelomurex hirasei* can be seen on the cover of this issue.**

**Stephanie Clark won with a single shell, *Clappia cahabensis* (Clench, 1965). Thought extinct by 1980, it was rediscovered in 2004.**

**Rick Batt & Robin Harris with an impressive display of melon or baler shells.**

extra weight in 99° F temperature. The final light of the trip was Andy Rindsberg admitting to me that his legs, like mine, were in pain for two days after the trip. We got our fossils, tested our mettle, and assured ourselves that the rest of the convention would be a piece of cake. Thanks to both Andy Rindsberg and David Campbell for the adventure and to Lauck Ward for the rescue.

### Convention Shell Show

Gene Everson, familiar to readers of this magazine as a true veteran and oft time winner of shell show events, volunteered to setup and run a shell show for the convention. His theme for the show was based on the word "Mobile," where each letter stood for a category that could start with that letter. Thus "M" could be *Murex*, miters, my favorite shell, etc. There were quite a few presenters and the tables with the cases full of beautiful shells were set up in the main briefing room so we could all get a look at the shells in between presentations.

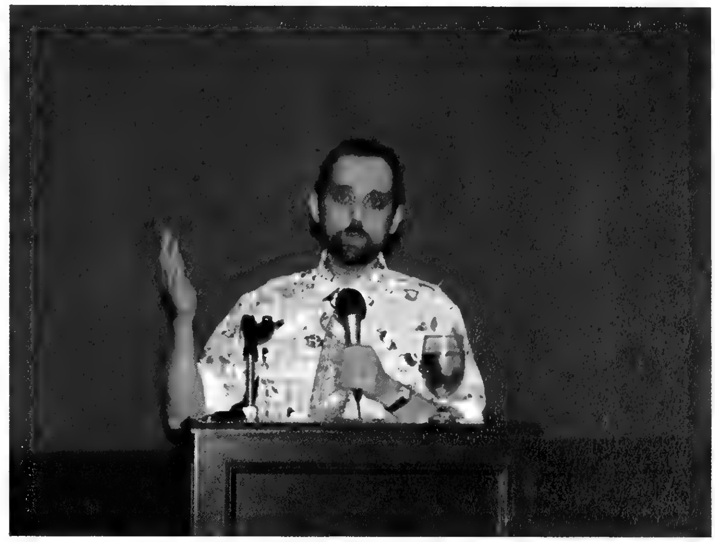
Among the winners of the show were Alan Bennett with his *Cypraea* display, Stephanie Clark with her lost but now found shell, Gene Everson with mitriform mollusks, Helen Kwiat with a special *Calliostoma*, and Marilyn Northrop with Coralliophilidae (one of her shells is our cover illustration for this issue). Other noteworthy exhibits included Rick Batt and Robin Harris with a spectacular case of melon shells, David Campbell with his endangered freshwater mussel, and Deborah Wills with Tennessee River mussels. Congratulations to all of these folks for adding to the convention experience.

### Convention Programs

Of major importance to every COA convention are the programs presented throughout the day. We rely on volunteers who spend many hours preparing slide or Power Point presentations and then stand in front of an audience that varies from professional to amateur, with interests that vary from the science of malacology, to collecting anything with a shell, to collecting shells of a single family of mollusks, to making "objects d' art" out of shells. The speaker then has to interest, educate, amuse, or enlighten this group. Not always an easy task. As has been the case in the past, we were very fortunate this year to have an excellent series of speakers, many talking to us for the first time, who spoke on a wide variety of topics. To mention them all is impossible (because I admittedly missed one afternoon's presentations with a trip to Gulfport, Mississippi, and New Orleans, Louisiana), and to mention just a few without including them all would be to slight some superb speakers. So I am left with generalities.

At this year's convention we had talks on fresh water mussels, mollusk locomotion (they are not all slow, some are jet powered), mollusk evolution, shelling in Japan, boring bivalves (yeah, I know, lots of folks think all bivalves are boring, but these are the ones that bore a hole into another shell, piece of wood, or rock), mollusks of Alabama, miniature mollusks, the uses of DNA in malacology, new species from Brazil, reproductive habits,

**Some of this year's convention speakers (left to right): Andrew Rindsberg (Alabama), G. Thomas Watters (Ohio), Carole Marshall (Speaker Coordinator, Florida), Stephanie Clark (Alabama), Alice Monroe (Florida), José Leal (Florida), José Coltro (Brazil), David Campbell (Alabama), Mary Owen (Illinois), Charles Owen (Illinois). Photo by Rodger Bunnel.**



**Paul Callomon was our banquet speaker, with a presentation entitled "Japanese Conchology From 1758 to 1921." He actually covered a few interesting facets prior to 1758 and then pressed on with 160 years of Japanese conchology. Note that Paul once again donned formal attire for the occasion. Photo Rodger Bunnel.**

shelling travelogues (Philippines, Hawaii, Mexico, and other places), fossil evolution, the use Power Point, and a kid's program on oceanography. Some of the subjects listed above include two or three different presentations, but the important thing is that we had an excellent and varied slate of speakers and programs.

Our banquet speaker this year was Paul Callomon who presented some of the little known history of Japanese conchology prior to 1925. Many of you will remember Paul from last year when he was one of our auctioneers. He was the bearded one in the turn-of-the century (not the last turn, but 100+ years ago) suit and with the sense of humor just south of dry. Paul's talk was a most suitable highlight to the convention presentations and he maintained the interest of a crowd the night before the Bourse, no easy task. This can be likened to keeping a child's attention on the night before Christmas (or their birthday, for any PC cops out there).

**Auctions & the Bourse**

As in year's past, we had a series of silent auctions each day of the convention. Here attendees were able to bid on and occasionally win, seashells and seashell related objects. There were no fistfights and any cries of "foul" were not heard until folks were around the bar in the evenings.

The aural auction was well attended and there was a plethora of shells and shell objects for those who just had to have them. I was scratching behind my ear and thus bid on and won a cowry I decidedly did not need. Our auctioneers were Hank Chaney (COA President) and Jim Brunner. Both of these individuals do a superb job behind the mike and both know how to "bump the bid up" faster than the bidders can drop their arms.

There are of course, two things to keep in mind with COA auctions. First, the proceeds go into the COA fund from which some $15,000 worth of research grant money is awarded every year. No other organization comes close to providing this amount for molluscan related research. Since the COA grant program began in 1985 (giving out $2,000 that year) the total grant money awarded as of 2006 is $154,785. Second, COA members donated all of the auction items and the many dealers who support this event gave (as they do every year) some of the nicest and most expensive items. These are items they could have sold for a profit the very next day. It is tempting to say that this charitable activity and annual funding of research grants are the reasons we were there, but that would be less than honest, as everyone knows the premier event is the Bourse.

**Alice Dennis and José Leal, two key aspects of the COA grants program. José (Director of the Bailey-Matthews Shell Museum) administers the program and Alice is a 2006 recipient. Her research at Louisiana State University is on cryptic speciation and freezing tolerance in *Melampus bidentatus*. Photo by Rodger Bunnel.**

**Convention goers peruse the offerings at one of the silent auctions. The proceeds from the silent and aural auctions support the COA grants program, a program that has grown seven-fold since its inception. Photo by Rodger Bunnel.**

The Bourse this year was every bit as exciting as in past years. We had some 35+ dealers from around the world gathered together in a 10,000+ sq. ft. ballroom with shells, books, jewelry, photographs, radiographs, cleaning tools, etc. laid out on tables under bright lights. Now this is why we were there! I know of no other event with a dealer meets hobbyist occasion as large as this. If you cannot find the shell you want here, then you can surely arrange to get it. For the first time convention attendee the Bourse can be a bit intimidating. Lots of people, lots of shells, crowds at some tables where there must be a super deal, etc. While I would not consider myself a pro at this event like Harry Lee, Kevan or Linda Sunderland, Anne Joffe, Phyllis Diegel, or Doris Underwood; I can give out a few pointers to any neophytes reading this. First, you need the basic shell-buying triangle. This is like the food nutrition pyramid, but more important. The shell-buying triangle consists of cash, checks, and credit cards. With these firmly in hand you can go from table to table, chatting with folks and buying shells, until you either cannot carry anymore or you are broke. I have personally never had so much in hand that I could not add another shell, but I have run into the last consideration a number of times.

**Felix Lorenz discusses Cypraeidae from behind a table filled with superb examples of this popular family. A side benefit of the COA convention is the opportunity to discuss your particular interest with experts, in this case the man who literally "wrote the book,"** ***A Guide to Worldwide Cowries*** **by Lorenz & Hubert.**

**This is what remains of long-time shell collector Joaquin Inchaustegui's house after hurricane Katrina went through Mississippi. He lost his home and everything in it, including his extensive shell collection and shell book library.**

### A Katrina Side Trip

Many of you know I attend these events with my shell buddy Bruce Neville. He is the one who corrects my English usage in this magazine as well as preventing me from butchering some of the more arcane scientific names. My wife, who gladly tolerates most aspects of my shell obsession, sets the limit at an entire week devoted solely to this avocation. So Bruce and I pack our earplugs (we both tend to snore) and enjoy our annual "shell week."

Bruce is also an avid birder and on most of these trips we find time to explore the local area so that he can spot that elusive sparrow, robin, or yellow-breasted brown-topped white-tipped whatever. While in Mobile we decided to do an afternoon bird run through coastal Mississippi to Louisiana. This was not meant as an excursion to view the damage left by hurricane Katrina, but that is how it ended up.

First of all, we saw very few birds. Whether this was an after-effect of Katrina or the high temperatures, I do not know. Secondly, we saw lots of evidence of the hurricane and the damage and devastation it wrought. There are still boats on their sides in the pine forests, piles of refuse that used to be homes, road closures, trees down everywhere, etc. Almost one year after the hurricane there is still a long way to go to recovery, a recovery that to date has cost $19 billion in federal money.

Many of our shelling friends were affected by this storm, some more than others. Our greeting by Doug Shelton at this year's convention included slides that showed some of the local area effects of the hurricane, including the high water in front of our hotel. The waves were lapping at the tops of the parking meters. On Conch-L

**Betty Lipe is presented her 2006 Neptunea Award by COA President Hank Chaney. Photo by Rodger Bunnel.**

**Jack Lightbourn is seen here receiving his 2006 Neptunea Award. Photo by Rodger Bunnel.**

we have all read messages about folks who lost their shell collections and their homes to Katrina. This little trip brought that all to life.

## *The Neptunea Award*

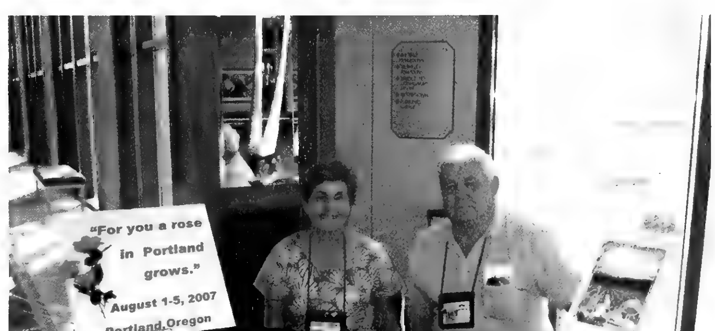
The Neptunea Award was established in 2000 as a means of recognizing "outstanding and distinguished service to conchologists and malacologists." This service can be to the COA organization, to the scientific interests of COA, or to the science of malacology as it applies to conchology. The submission form is printed in the December issue of *American Conchologist*. The resultant nominations from COA members are collected by the COA Trustee, Carole Marshall, and forwarded the COA President Hank Chaney. All nominations are then mailed to COA board members who vote for the winner(s) at mid-year for announcement at the annual convention. Current COA board members are not eligible for the Neptunea Award. This year's most deserving winners were Betty Lipe and Jack Lightbourn, both well known to COA members.

Betty Lipe has served as vice-president and president of COA and has been chairperson for several conventions. When others would sit back and relax after such service, she continues to volunteer and help keep COA a going concern. Betty could be found this year behind the registration table helping convention attendees and making sure the various convention events ran as smoothly as possible. She is the Advertising Director for *American Conchologist*, another volunteer position she has held for several years. Betty can also be found behind a shell dealer's table at each Bourse as she and her husband Bob run The Shell Store in St. Petersburg, Florida.

Jack Lightbourn is from Bermuda where he has become an institution in the world of conchology. A World War II veteran, Jack spent endless hours after the war collecting off Bermuda's shores. After his retirement from banking, he worked with local authorities to set up and establish the first shell museum of Bermuda as part of the Ocean Discovery Centre at the Bermuda Underwater Exploration Institute in Hamilton, Bermuda. Jack donated his extensive shell collection, including many rare deep-water shells, to the establishment of this museum that now provides thousands of visitors a glimpse into the world of conchology.

### Closing Thoughts

I think the Neptunea awards are a perfect place to end this report of the COA 2006 convention in Mobile, Alabama. It was a great success and all of the people who worked so tirelessly to bring it off can be proud of their accomplishments. If you attended, maybe some of these images will bring back a memory or two. If you were unable to attend, start making plans now to attend the COA 2007 convention in Portland, Oregon. To anyone even slightly interested in shells and conchology, the annual COA convention is a real treat. See you in Portland!




**Joyce & Ken Matthys greet convention goers and invite all to the 2007 COA Convention in Portland, Oregon. Photo by Rodger Bunnel.**


# Your Invitation to Come to Oregon in 2007

## By Joyce Matthys
## Convention Chairperson

The Oregon Society of Conchologists invites you to experience "Chardonnay & Shells" when you attend the Conchologists of American Convention next year in Portland, Oregon, 1- 5 August 2007.

The convention will be held at the Monarch Hotel & Conference Center, a locally and independently owned and operated hotel. It has the reputation of being a "small hotel" that focuses on service and hospitality. It has 192 guestrooms and five suites. Because of the interest expressed at this year's convention, a number of the rooms have already been reserved by COA members and a number of the guestrooms are contracted to airlines. The hotel also owns two other lodging properties across the highway but if you want to be assured that you are staying where the convention is being held, you should reserve your room as soon as possible. No charges will be made to your credit care prior to your check-in. Standard rooms are guaranteed not to exceed $94.00 plus 7% tax. Phone 1-800-492-8700 and identify yourself as a COA member.

Program Chairman John Mellott is looking for program topics and speakers for the convention, if you have an idea for a presentation please contact him. His e-mail address is retheresa@comcast.

Specific information about the tours will be given in the next issue, but if you don't want to wait until then check out the Oregon Society of Conchologists web site at www.oregonshellclub.com.

Scheduled field trips for July 30 and July 31 include:

Shell Collecting on the Oregon Coast
Fossil Collecting on the Oregon Coast
Mt. St. Helens Tour
Mt. Hood Loop Tour
Wine Tasting Tour

Our shell club is very excited about hosting the 2007 convention and we are planning a convention that you are sure to enjoy. If you have never visited Oregon before you will want to check out the following websites: www.travelportland.com, www.mthoodterritory.com, and www.traveloregon.com. You just may want to extend your time in Oregon and turn your shell trip into a vacation.

We know that you will enjoy Portland and the Pacific Northwest. We look forward to seeing you in 2007.

# On *Daphnella (Paradaphne) retifera* Dall, 1889

## by Emilio Fabián García

In spite of the fact that *Daphnella (Paradaphne) retifera* Dall, 1889, has been collected from off Cape Hatteras, North Carolina (type locality), to Rio Grande do Sul, Brazil, it still remains a rather obscure species for most collectors. It is not pictured in Dall's original description (1889:105) or in Abbott's *American Seashells* (1974:288). Moreover, it is a relatively small species, seldom reaching 9mm, and it inhabits rather deep water. Most or all records are based on dredged material. Although the genus *Daphnella* has traditionally been placed in the subfamily Daphnellinae, Bouchet & Rocroi (2005) have shown that Raphitominae is an earlier name.

Dall found *Daphnella retifera* to be "a very delicate and elegant little shell." What seems to have caught his attention, however, was its protoconch: "nucleus of the *Sinusigera* type to begin with, but not strongly sculptured, and the larval shell after 2½ turns **of the usual sort** [boldface is mine] becomes smooth and continues for 2½ whorls more, quite smooth and rounded, before the normal sculpture begins." In the last paragraph of his description Dall succinctly differentiates *D. retifera* from similar species stating, "…remarkable for the number and size of its larval whorls and prickly reticulations."

The type species of *Daphnella* s.s is *D. lymneiformis* (Kiener, 1840), a species that, together with a number of other *Daphnella* species, has a smaller narrower protoconch than raphitomine species assigned to *Paradaphne*. *Daphnella retifera* belongs to the latter.

Laseron (1954) proposed the taxon *Paradaphne* for the Australian species *Daphnella botanica* Hedley, 1918, but Powell (1966:123) could "find no characters of differentiation for *Paradaphne*" and placed the latter in synonymy. Abbott (1974:287) followed Powell. The reality, however, is quite the opposite, and the differences between the two taxa are striking enough that perhaps *Daphnella* and *Paradaphne* should be treated at the same taxonomic level, as has happened with other similar raphitomid genera, e.g., *Gymnobela* and *Pleurotomella*.

Lyons (1972:6) clearly establishes the distinguishing parameters between the two taxa. He states that "*Daphnella* and closely related species have a smaller, more slender protoconch of 2½ - 3 whorls, with little variation of strength of diagonal cancellation of the last whorl," and that "intersection of nuclear and postnuclear sculpture is abrupt, without the overlap zone of *Paradaphne*… . In addition, the outer lip of adult *Daphnella* s.s. is flared anteriorly, not tapered and constricted as in *Paradaphne s.s.*" All of the above characters can be seen in the plate that accompanies this note.

Other American species that have been assigned to *Paradaphne* are *D. (P.) margaretae* Lyons, 1972, its Panamic "cognate" *D. (P.) bartschi* Dall, 1819, and *D. (P.) antillana* Espinosa & Fernández-Garcés, 1990.

My thanks to Dr. Harry G. Lee, of Jacksonville, Fl., who prompted me to write this note. The specimen shown was dredged under grant no. 0315995 of the National Science Foundation.

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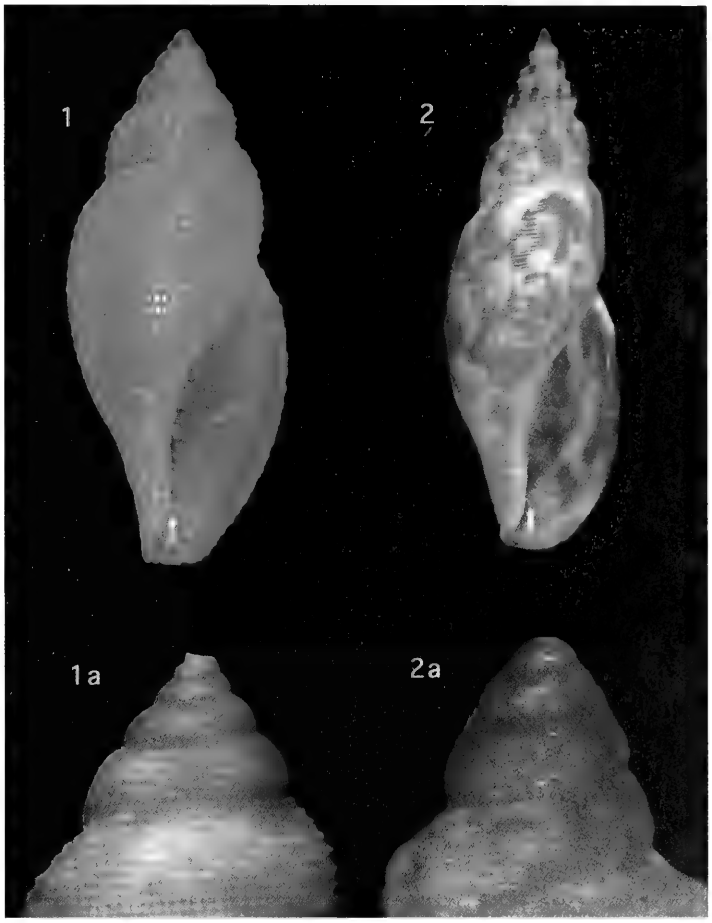



**1-1a- *Daphnella (Paradaphne) retifera* Dall, 1889; 9mm, 20°51.16'N, 92°26.28'W. Dredged off Campeche, Gulf of Mexico, in 94m; EFG26568.**

**2-2a- *Daphnella (Daphnella) lymneiformis* (Kiener, 1840); 14mm; Pompano Beach, Florida. Hand-dredged in sand pockets; EFG19681, leg. O. K. McCausland.**

### References:

**Abbott, R. T.** 1974. American Seashells, 2nd ed. [viii] + 663 pp., 24 pls. Van Nostrand Reinhold: New York.

**Bouchet, P. & J. P. Rocroi.** 2005. Classification and nomenclature of gastropod families. *Malacologia* 47(1-2):1-397.

**Dall, W. H.** 1889. Reports on the results of dredgings, under the supervision of Alexander Agassiz, in the Gulf of Mexico (1877-78) and in the Caribbean Sea (1879-80), by the U. S. Coast Survey Steamer 'Blake.' Bul. of the Mus. of Comp. Zoology, no. 18: 1-492, pls. 10-40.

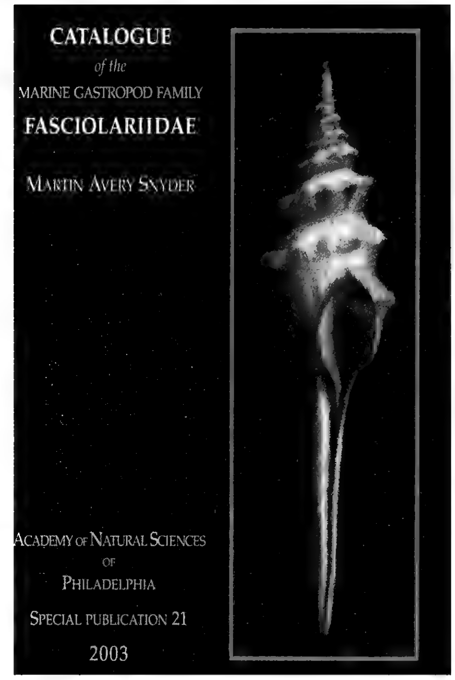
**Espinosa, J. and R. Fernández-Garcés.** 1990. El género *Daphnella* (Mollusca: Neogastropoda) en Cuba. Descripción de nuevas especies. *Poeyana* 396: 1-16. July 28.

**Lyons, W. G.** 1972. New Turridae (Gastropoda: Toxoglossa) from South Florida and the eastern Gulf of Mexico. Nautilus 86 3-7.

**Powell, A. W. B.** 1966. The molluscan families Speightiidae and Turridae. An evaluation of the valid taxa, both Recent and fossil, with lists of characteristic species. *Bul. of the Auckland Inst. & Mus.* No. 5. Unity Press Ltd., Auckland, New Zealand, 184 pp.

# Catalogue of the Marine Gastropod Family Fasciolariidae

## Book Review by William G. Lyons




**Martin Avery Snyder, 2003.** Academy of Natural Sciences of Philadelphia, Special Publication 21; iv + 431 pages; soft cover; US$38.50 + postage and handling.

Martin Avery Snyder has compiled a remarkable catalogue of names of the Fasciolariidae, the snails that includes tulips, horse conchs, spindles, and myriad others familiar to shell collectors. The family is diverse, with more than 400 living species and who knows how many extinct in a fossil record that extends back through the Cretaceous, a span of about 110 million years. Shell morphology of some of the species varies geographically and temporally, which has led to quite a few synonyms.

Shell groups most popular with collectors, such as Muricidae, Conidae, Cypraeidae and Volutidae, seem to be revised every few decades, but the Fasciolariidae has received little attention since the family or its subfamilies were revised about a century ago. Many new species have since been (and continue to be) described, but the information is scattered and needs to be brought together to allow a modern overview of the composition and classification of the family. This catalogue (hereafter "the *Catalogue*") constitutes major progress toward that goal.

What the *Catalogue* is not is an identification guide. No descriptive information is provided for the names; information on range is scant and usually quite general; and the only pictures are seven, on the back cover, of species described by the author.

The *Catalogue* begins with a brief introduction and acknowledgments, followed by an even briefer synopsis of the family group. Next is a 19-page alphabetical compilation of generic names that provides the original reference, type species, status of each taxon, and its subfamilial classification. The last part of the generic compilation is a list of genus-level names no longer considered members of Fasciolariidae; names on this list are not annotated or otherwise explained, and I suspect that a few may yet prove to belong in the family.

This section is followed by a 195-page compilation of several thousand species-level names, again in alphabetical order. Names include those validly proposed and in use, as well as their synonyms, including unavailable names (*e.g.*, *nomina nuda*) and, in quite a few instances, simple misspellings. The author(s), date of publication, original pagination and figures are cited for each name. The status of each name as a valid species, synonym, etc., is usually stated, and abbreviated synopses of taxonomic history are presented for many of them.

The next 100 pages contain "abbreviated species lists, by group." Here, genus-level names are allocated among 18 "groups," for example a *Fasciolaria* group, a *Pleuroploca* group, etc., but also a Cretaceous group and a Jurassic group, the last judged to contain only non-fasciolariid taxa. Species-level names are then listed for each group. Each list includes species validly assigned to the group plus others previously assigned there but now classified elsewhere. For example, *Fusus filamentosus* Röding, 1798 is listed in the *Fusinus* group because it was described as *Fusus*, in the *Fasciolaria* group because it was later classified in *Fasciolaria*, and in the *Pleuroploca* group, because that's where it's presently classified. All three listings contain much the same information – the lists simply provide several ways to get at it.

The last 106 pages comprise an extensive bibliography with full citations for the approximately 2,500 published references consulted to compile the *Catalogue*.

Is the *Catalogue* complete? Approximately 1,400 species-group names applicable to Recent fasciolariid taxa are listed (many other names originally introduced in *Fusus* apply to species of Buccinidae, etc.). I checked these against my unpublished compilation of fasciolariid names, principally Recent. The *Catalogue* includes several dozen names of which I was unaware, and my compilation includes 15 names of Recent species (and 1 fossil) that do not appear in the *Catalogue*. Suffice it to say that the latter names are all junior synonyms or *nomina nuda* and I will publish the list elsewhere. Thus, the *Catalogue* is about 99% complete, at least for Recent species. In fact, its principal value is in its accurate listing of names, their original spellings, combinations in which they were introduced, and citations and dates of their original publication.

Having said that, I must mention some flaws. There are a few errors of gender. For example, the species name in the combination *Latirolagena smaragdulus* (Linnaeus, 1758) is a Latin noun meaning "a small green precious stone, especially an emerald." As a noun it does not change to modify the gender of its genus, so labels and citations for "*Latirolagena smaragdula*" are incorrect. Hundreds of variant or erroneous spellings, deliberate and otherwise, are listed but perhaps as many are not listed, and it is seldom evident why a misspelled name is or is not listed. Moreover, the *Catalogue* introduces a few misspellings of its own, regrettable but expectable in a work of this size. Curiously, there are three misspellings of *Fusinus columbiensis* [*sic*], an error for the author's own *Fusinus colombiensis* M. A. and N. C. Snyder, 1999.

I noted a few problems with publication dates and original localities. Also, synonymies and synopses of taxonomic history that accompany many of the names are incomplete and sometimes

misleading. A properly prepared synonymy documents credit and blame. When it is stated that a name was introduced in genus A by author X and reclassified in genus B by author Y, the user of a work such as this is entitled to expect that author Y was the original reviser. Often, this is not so in the *Catalogue*. These problems will be discussed in a more extensive review elsewhere.

Two recent papers with pertinent reclassifications are not given their due. Here's the short version: Hadorn (1996) compared type specimens and showed that *Fusinus panamensis* Dall, 1908, of the Panamic Province, is a junior synonym of *Fusus spectrum* Adams and Reeve *in* Reeve, 1848, described from a shell erroneously labeled as collected by H.M.S. *Samarang* from "eastern Seas," so *spectrum* must replace *panamensis*; a lesson in why we must keep labels straight. Then Rolán and Schoenherr (1997) figured radulae and demonstrated that *Fusus buxeus* Reeve, 1847, and *Turbinella filosa* Schubert and Wagner, 1829, well-known species currently classified in *Pleuroploca* and *Latirus*, respectively, must be moved to *Fusinus s.l.* The *Catalogue* ignores these reclassifications or dismisses them as erroneous, but I'm confident that radular evidence will prevail and more labels will be changed.

The *Catalogue* attempts to resurrect by fiat *Fasciolaria papillosa* G. B. Sowerby, 1825, as the senior name for *Fasciolaria gigantea* Kiener, 1840, the well-known "horse conch." That controversy should have ended 60 years ago; Sowerby's name is unidentifiable. However, I applaud the classification of the horse conch in the genus *Triplofusus* Olsson and Harbison, 1953, in the *Catalogue*; most modern workers still classify the species in *Pleuroploca*.

Would I buy this book? You bet; I find myself consulting it often. Anyone wishing to know who named a species, when it was described, and whether the author and date need to be in parentheses will find the *Catalogue* useful. The extensive bibliography is similarly valuable. If you are a collection manager or a keeper of official lists of names, an occupation that now seems to be in fashion, you need this book. Should you buy it if you are a beginning shell collector? Probably not. If, however, you are a serious collector, if you display competitively, or if your collection is heavy on Fasciolariidae, you need this book. Finally, if you are one of those advanced collectors who sends me an email every week or so to ask about the correct date or spelling for a fasciolariid name, please buy this book.

**References:**

**Hadorn, R.** 1996. Beitrage zur Kenntnis der Gattung *Fusinus* Rafinesque 1815 (Gastropoda: Fasciolariidae), II, Vergleich der taxa *Fusinus panamensis* Dall 1908 und *Fusinus spectrum* (Adams + Reeve 1848). Club Conchylia Informationen 28(3-4): 66-69.

**Rolán, E. & C. Schoenherr.** 1997. Aportaciones al conocimiento del género *Fusinus* (Gastropoda, Muricidae) en África Occidental. Noticiario de la Sociedad Espanola de Malacologia No. 28: 48-51.

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# Shell Show Schedule for the Second Half of 2006
## by Donald Dan

Jul. 29-Aug. 3, 2006 **JOINT AMERICAN MALACOLOGICAL SOCIETY/WESTERN SOCIETY OF MALACOLOGY MEETING,** University of Washington, Seattle, WA
**Dr. Roland C. Anderson**, 1483 Alaskan Way
Seattle, WA 98101, USA
E-mail: roland.anderson@seattle.gov
Tel. (206) 386-4346

Aug. 18-20, 2006 **JERSEY CAPE SHELL SHOW**, The Wetlands Institute, Stone Harbor, New Jersey
**Karen Lelli** e-mail: kjlelli@comcast.net
Tel. (856) 691-5831

Sept. 15-17, 2006 **NORTH CAROLINA SHELL SHOW,** Museum of Natural Sciences, Raleigh, NC
**Ann Buddenhagen**, 8321 Amber Leaf Court
Raleigh, NC 27612
E-mail: pabjetster@bellsouth.net
Tel. (919) 787-7103

Sept. 16-17, 2006 **27th INTERNATIONAL SHELLS & FOSSIL BOURSE,** Salle Polyvalente, Rue de la Priscine, Ottmarsheim, France
**Michel Rioual**, 2 Rue des Vergers
68490 Ottmarsheim, France
Tel. (3) 89-26-16-43

Sept. 23-24, 2006 **ANNUAL GERMAN SHELL FAIR**, KULTURA Hall, Herrenwiesenstr. 12, Oehringen, Germany
**Kurt Kreipl**, Hoehenweg
D-74613 Oehringen-Cappel, Germany
E-mail: meeresmuseum@t-online.de
Tel. (7941) 62-826, fax: (7941)2065

Oct. 7 - 8, 2006 **PHILADELPHIA SHELL SHOW,** Academy of Natural Sciences, Parkway & 19th St., Philadelphia, PA
**Al Schilling**, 419 Linden Ave.
Glenside, PA 19038
E-mail: alsch@bellatlantic.net
Tel. (215) 886-5807

Oct. 28, 2006 **BRITISH SHELL COLLECTOR'S CLUB CONVENTION,** Napier Hall, Hide Place & Vincent Street, London, England
**Tom Walker**, 38 Redlands Road
Reading, Berkshire RG1 5HD, England
E-mail: tom@tmwalker.co.uk
Tel. 44 (118) 987-4294

Nov. 4 – 5, 2006 **11th PRAGUE INTERNATIONAL SHELL SHOW,** KULTURNI DUM LADVI Buresova 1661, Prague 8, Prague, Czech Rep.
**Jaroslav Derka**, Holeckova 51/370
15000 Praha 5, Czech Republic
E-mail: jderka@volny.cz
Tel. 42 (2) 5731 6246

**Donald Dan,** 6704 Overlook Drive, Fort Myers, FL 33919, USA
Tel. (239) 481-6704

# Fasciolariidae

## Book Review by William G. Lyons

**Daniel Mallard and Alain Robin, 2005.** Muséum du Coquillage, Les Sables d'Olonne, France; 27 pp., 70 color plates; soft cover; US$58 + postage and handling.

Unlike Snyder's (2003) *Catalogue*, this book will help you identify those puzzling spindles, tulips, peristernias, and other troublesome species of Fasciolariidae in your collection. It is full of color photographs showing every species of the family that the authors could get their hands on and a few more besides. The photography is generally outstanding and the printing is first rate. Like its obvious predecessor, *Mitridae Costellariidae* (Robin & Martin, 2004), the purpose of this book is to provide scientific names and good illustrations of virtually every member of the targeted family, a worthy and useful goal.

The book begins with a paragraph of generalities about the family, a brief key to the genera, a one-page listing of higher phylogenetic classification, and another page of acknowledgements; all except the classification are presented in both French and English. Next comes a 15-page section containing very brief accounts for about 400 taxa (389 species and 11 subspecies by my count) presented in phylogenetic order. A typical account includes the species name (genus, species, author, date), a reference to its figures in the book (*e. g.*, Plate 56), range (*e.g.*, "Australia"; etc), average size (in mm), a rudimentary synonymy, and sometimes, brief notes. Forty-two taxa are mentioned only by name and range; evidently no figures of them could be obtained. This section is followed by a four-page index citing page and plate numbers for every genus and species name and distinguishing valid names from synonyms. A two-page "bibliography" that follows is so rudimentary that only those already familiar with the literature will know what many of the citations mean, and some remain undecipherable to me.

The main part of this book is its illustrations. The 70 pages of plates are preceded by an unpaginated frontispiece, a remarkable color photograph of the living animal of *Dolicholatirus noumeensis* (Crosse, 1870). On the plates appear figures for more than 350 species and subspecies, most shown in both apertural and dorsal view. The color photographs for most of the species range in quality from good to outstanding. Some of them are credited as ©D. Lamy, ©Femorale, ©Showcase Shells, ©Fraussen, and ©MNHN (Museum Nationale d'Histoire Naturelle, Paris), and several from the last two sources show type specimens. Sources of the other color photographs are not stated; presumably, many are by the authors, but some are recognizable from other sources. At least three of the species were illustrated earlier on that wonderful website http://seashellsofnsw.org.au; if these are not the same figures, they are certainly the same shells.

I count about 70 figures apparently copied from other works, most representing species for which no other figure is offered. Presumably these are species for which the authors could not obtain good color photographs and are included, for "completeness," to provide something for every species. The quality of these figures, principally black and white pictures, varies from bad to rather good. Some are credited to works in which they earlier appeared (*e.g.*, *Journal of Conchology* and Tryon's (1880-1881) *Manual of Conchology*) but many carry no attribution; among the latter are some figures that appeared in Kaicher's (1978; 1986) *Card Catalogue of World-Wide Shells* and others that were published by Hadorn and Rogers (2000). All "borrowed" figures should have been properly credited. Plate 70 contains nine full-color "borrowed" figures said to be "after Reeve, 1848 and Kiener, 1858"; in fact, seven of the figures were published by Kiener (1840a, b) and two were published by Reeve (1847a, b).

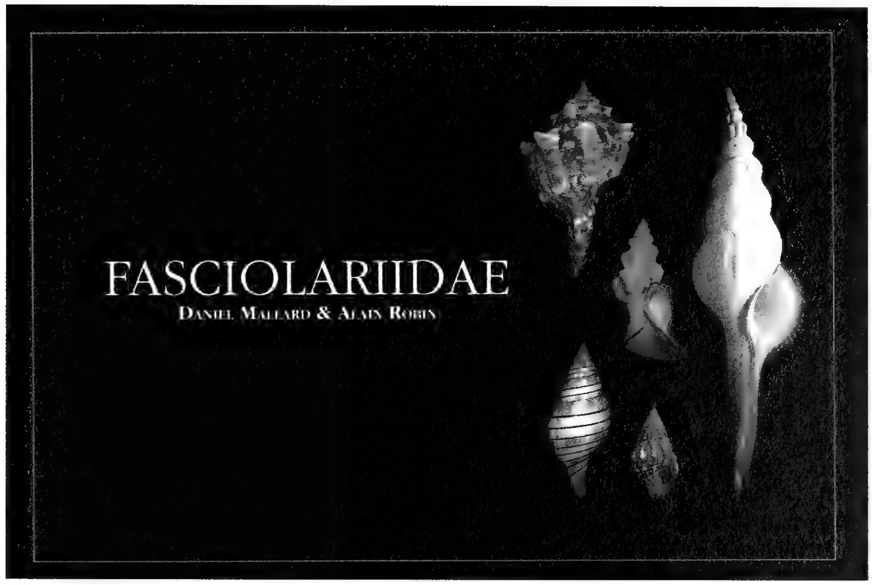
Plates 65-68 are devoted to genera and species of families that may have been confused with Fasciolariidae. Attention to these figures will allow readers to correct several mistaken classifications recently popular; note, for example, that *Afer pseudofusinus* and the genus *Colubraria* are not fasciolariid.

What's the downside? There are misidentifications, although these probably amount to no more than 5 % of the species. Some examples, among others: the shell figured as *Fasciolaria lilium branhamae* (pl. 1) is actually a coralline-bottom form of *Fasciolaria lilium lilium*; true *Fasciolaria branhamae* is not figured in the book. Similarly, "*Fasciolaria* cf. *bullisi*" (pl. 4) is simply a slender, yellow morph of *Fasciolaria tulipa*; I have several like it. The shell figured as *Saginafusus pricei* (pl. 10) seems to be a species of *Pugilina*, Melongenidae. The shell figured as *Pleuroploca salmo* (pl. 10) is another *Pleuroploca granosa* (see pl. 8). The shell figured as *Pleuroploca wattersae* (pl. 11) is another *Fasciolaria rutila* (see pl. 1). The shell figured as *Fusinus forceps* (pl. 20) is the Indian morph of *Fusinus colus longicauda*, and the shell next to it, figured as *Fusinus forceps salisburyi*, is *Fusinus forceps*; *Fusinus salisburyi*, a separate species, is not figured in the book. The shell figured as *Fusinus* cf. *faurei* (pl. 21) is the species correctly figured as *Granulifusus rubrolineatus* (pl. 38). The larger shell figured as *Fusinus tuberosus* Reeve, 1847, (pl. 33) is a species of *Euthria* (Buccinidae). The shell figured as *Latirus lautus* (pl. 45) is the species correctly figured as *Latirus pictus* (pl. 48). Of two shells misidentified as *Latirus marquesana* [*sic*] (pl. 46) from the Philippines, the one on the right seems to be *Peristernia hesterae* (Melvill, 1911) and the one on the left may be *Peristernia luchuana* Pilsbry, 1901; *marquesana* is a species of *Peristernia* endemic to the Marquesas Islands. The 91mm shell figured as *Latirus polygonus* from India (pl. 48) is the same shell that was earlier cited as 70mm long and correctly figured as the Red Sea endemic *Fusinus polygonoides* (pl. 28). Much of the shell's long siphon was cropped from the picture on pl. 48 but still it grew 21 mm. And several photographed shells figured as species of *Peristernia* on pl. 61 are species of Buccinidae and Muricidae.

The text and index do not always agree with the figures. For example, a species account for *Fusinus irregularis* (Grabau, 1904) (p. 12) notes that it may be a subspecies of *Fusinus dupetitthouarsi* (Kiener, 1840). No figure is cited for *irregularis* in the species account or the index but on pl. 19 there it is, identified

as *Fusinus dupetitthouarsi irregularis*, an incorrect classification that hasn't been used, except as an original combination in Snyder's *Catalogue,* since Grabau (1904) introduced the name; the error may be due to a misreading of the *Catalogue*.

The influence of the *Catalogue* is quite evident in this book. The authors acknowledge its "great help" during preparation of the book, and several errors perpetrated in that earlier work are faithfully repeated here. As examples: *Fulgur africanus* Sowerby III, 1897, (pl. 65) is placed in Melongenidae, probably because the same error occurs in the *Catalogue*. I've examined the radula of *Fulgur africanus* and it is fusinine, so the species belongs in the fasciolariid genus *Fusinus s.l.*, where it has been classified by most contemporary authors. Also, misspellings of *Fusinus columbiensis* [*sic*] in the *Catalogue* are repeated here. Of greatest concern to me, though, is that the authors use *Pleuroploca papillosa* for the horse conch, thereby accepting *papillosa* over *gigantea* but without accepting its transfer to *Triplofusus*.




A serious problem throughout the book is that parentheses are not used for authors and dates when called for. The authors should have consulted the *Catalogue* to ascertain which authors and dates require parentheses.

Finally, there are some misspellings, "Mississipi," "Bonnaire," and "Carribean," to mention a few, and the name of the COA's own Walter Sage is misspelled "Cage" on pl. 43. In the era of desktop publishing, more and more manuscripts are sent to print without adequate editorial scrutiny. One penalty of the new freedom is that a lot more errors, factual and typographic, are making their way into print. Most obvious errors in this book might have been avoided if the manuscript had been sent for review to others knowledgeable in the classification of the family.

To summarize: this will be a very useful book to shell collectors. The illustrations are generally excellent and most of the identifications are accurate, or at least reflect contemporary published wisdom. I recommend it highly for those who wish to begin straightening out the fasciolariids in their collection.

**References**:

**Grabau, A. W.** 1904. Phylogeny of *Fusus* and its allies. Smithsonian Miscellaneous Collections 44(1417): i-iii, 1-193.

**Hadorn, R. & B. Rogers.** 2000. Revision of Recent *Fusinus* (Gastropoda: Fasciolariidae) from tropical western Atlantic, with description of six new species. Argonauta 14(1): 5-57.

**Kaicher, S. D.** 1978. Fasciolariidae Part I. Card Catalogue of World-Wide Shells No. 18: cards 1753-1859.

**Kaicher, S. D.** 1986. Fasciolariidae Part II. Card Catalogue of World-Wide Shells No. 46: cards 4624-4729.

**Kiener, L. C.** 1840a. Spécies Général et Iconographie des Coquilles Vivantes, V. Genre Fuseau (*Fusus*, Bruguiére). Rousseau et Baillière, Paris. 1-62, pls. 1-31.

**Kiener, L. C.** 1840b-41. Spécies Général et Iconographie des Coquilles Vivantes, VI. Genre Turbinelle (*Turbinella*, Lamarck). Rousseau et Baillière, Paris. Pls. 1-21 (1840), pp. 1-50 (1841).

**Reeve, L. A.** 1847a. Conchologia Iconica, or Illustrations of the Shells of Molluscous Animals. Vol. 4. Monograph of the Genus *Turbinella*. Reeve, Benham, and Reeve, London. Pls. 1-13, index.

**Reeve, L. A.** 1847b-48. Conchologia Iconica, or Illustrations of the Shells of Molluscous Animals. Vol. 4. Monograph of the Genus *Fusus*. Reeve, Benham and Reeve, London. pls. 1-21, index [pls. 1-14: November-December 1847; pls. 15-21: January-April 1848].

**Robin, A. & J.-C. Martin.** 2004. Mitridae Costellariidae. Xenophora, Paris. 32 pp., 64 pls.

**Snyder, M. A.** 2003. Catalogue of the Marine Gastropod Family Fasciolariidae. Academy of Natural Sciences of Philadelphia, Spec. Pub. 21. Iv + 431 pp.

**Tryon, G. W., Jr.** 1880-1881. Tritonidae, Fusidae, Buccinidae. Manual of Conchology, Vol. III, parts 9-12: 1-64 [part 9; 31 December 1880], 65-310 [part 10-12; 1881], pls. 1-87.

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## In Memoriam

**Ronald Bender**

**Dr. Marty (Marlyn) Bortner**

**William A. Conklin**

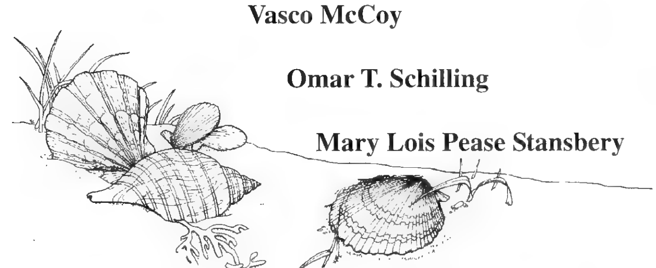
**Virginia Gaston**

**Jerry de Graaff**

**Vasco McCoy**

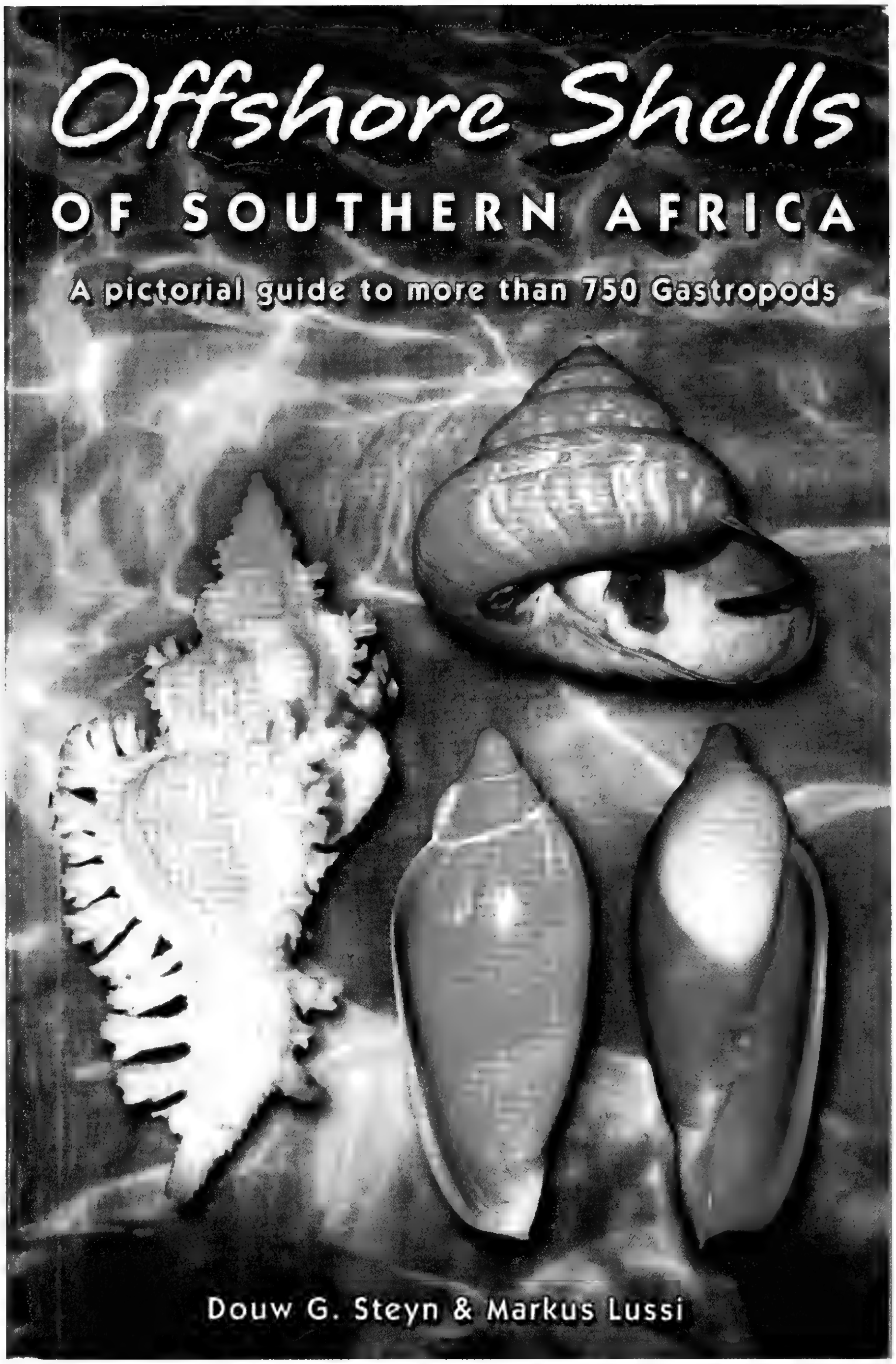
**Omar T. Schilling**

**Mary Lois Pease Stansbery**



# Offshore Shells of Southern Africa. A pictorial guide to more than 750 Gastropods

## Book Review by Zvi Orlin




**Douw G. Steyn & Markus Lussi. 2005**. 4 images, 289 pp.

We are once more indebted to the authors for publishing a second book on South African shells. Their first book, *Marine Shells of South Africa*, was devoted to species from the beaches and intertidal zones, accessible to the average collector. This new publication has broadened the field of enquiry and presents us with over 560 species, subspecies, and forms of gastropods from offshore waters. Many of them are rare and relatively unknown to most collectors.

The taxa recorded are generally at least 20mm in size and are from the southern coastline of South Africa, Southern Mozambique, and Namibia. Colored photographs, of both the ventral and dorsal sides of the specimen, illustrate each taxon. Opposite each image is a short description of the salient features of the shell, including: the location and depth at which it was found, the size of the photographed specimen, and the rarity and whether or not the species is endemic. A very extensive bibliography is also recorded.

I was very pleased to note the inclusion of endemism, which in my humble opinion is very important and often difficult to ascertain. In South Africa it has been noted that over 50% of the mollusks are endemic, but to the best of my knowledge, no list has as yet been published. According to my counting, 316 endemic species have been recorded in this book. It is a start, and will hopefully be followed by additional lists.

Compared to the first book published by the authors, the illustrations are much larger and more distinct. Although many of the taxa appeared in the former book, they are now better illustrated with more extensive habitat notes. Much of the information in this book is from articles that appeared in publications or scientific journals, many of which are not easily available to the average conchologist. I strongly recommend this fine publication to anyone who is interested in South African shells. Once again we must thank Prof. Steyn and M. Lussi, for their excellent work in increasing our knowledge of South African shells. We can only hope we will see additional books on shells from deep waters and more work on endemics and microshells.

Zvi Orlin
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# COA Grants Program

During the convention Dr José Leal (COA Grants Director) announced details of the 2006 COA grants awarded and noted the program was in its 21st year. The total for grants awarded for 2006 is $14,456.53. Grants in amounts up to $1,500 are available to qualified persons undertaking field or laboratory research on Recent or fossil mollusks. The competitive grant awards are available to applicants worldwide.

Grant applications are reviewed by the COA Grants Committee: Dr. Henry Chaney (Santa Barbara Museum of Natural History), Dr. Gary Rosenberg (Academy of Natural Sciences of Philadelphia), and Dr. José Leal (Bailey-Matthews Shell Museum). Details of application procedures and past awards are available on line at: http://www.conchologistsofamerica.org/grants/ The next deadline for applications is 28 February 2007. Applications must be postmarked by this date, or if submitted electronically, e-mailed not later than 12:00 PM on 28 February 2007, US Eastern Standard Time.

### THE WALTER SAGE FUND

This endowment was established in memory of Walter Sage who was instrumental in the vigorous growth of the COA organization in the 1980's. Two smaller endowments, the Bill Old Fund and the Veronica Johns Fund were eventually folded into the Walter Sage Fund.

### THE PAUL AND HEATHER JOHNSON FUND

In June of last year, we received a $20,000 donation to be set up as a named endowment in celebration of Paul Johnson's 70th birthday. Paul and Heather regularly flew in from England to participate at our annual COA conventions.

## COA Grants for 2006

| Awardees | Institution | Research Title |
|---|---|---|
| Auld, Josh R. | University of Pittsburgh, PA | The density-dependent and density-independent effects of predators on the mating system of the hermaphroditic freshwater snail *Physa acuta* |
| Bennett, Kyle | Rutgers University, Hillsborough, NJ | Phenotypic plasticity and multiple cryptic species in discretely different habitats of the scorched mussel, *Brachidontes exustus*, species complex in the Florida Keys |
| Crowley, Louise* | American Museum of Natural History, NY | Phylogeny and diversification of the bivalve order Arcoida Stoliczka, 1871 (Pteriomorphia: Mollusca) |
| Dennis, Alice | Louisiana State University, Baton Rouge, LA | Cryptic speciation and freezing tolerance in *Melampus bidentatus* (Pulmonata: Elobiidae) |
| Hall, Kevin T. | University of Hawaii at Manoa, HI | Integrating empirical observation and genetic inference to guide translocation: Hawaii's endangered *Achatinella* tree snails as a case study |
| Harnik, Paul | University of Chicago, IL | Estimating molluscan species rarity in the fossil record |
| Hayes, David M. | Arkansas State University, Jonesboro, AR | Molecular phylogenetics of *Elimia potosiensis* (Caenogastropoda: Pleuroceridae) |
| Hochberg, Rick | University of Massachusetts, Lowell, MA | The nervous and muscular systems of interstitial solenogastres: functional and phylogenetic significance |
| Meyer, Wallace M. | University of Hawaii at Manoa, HI | Life histories, population densities, and habitat preferences of native Hawaiian succineid snails |
| Smith, Ursula | Paleontological Research Institution, Ithaca, NY | Evolutionary dynamics of Neogene turritelline gastropods in New Zealand: an integrated appraoch |

* Walter Sage Memorial Grant Award.

# The Two Faces of *Tibia martini* (Marrat, 1877)

## By Tom Eichhorst

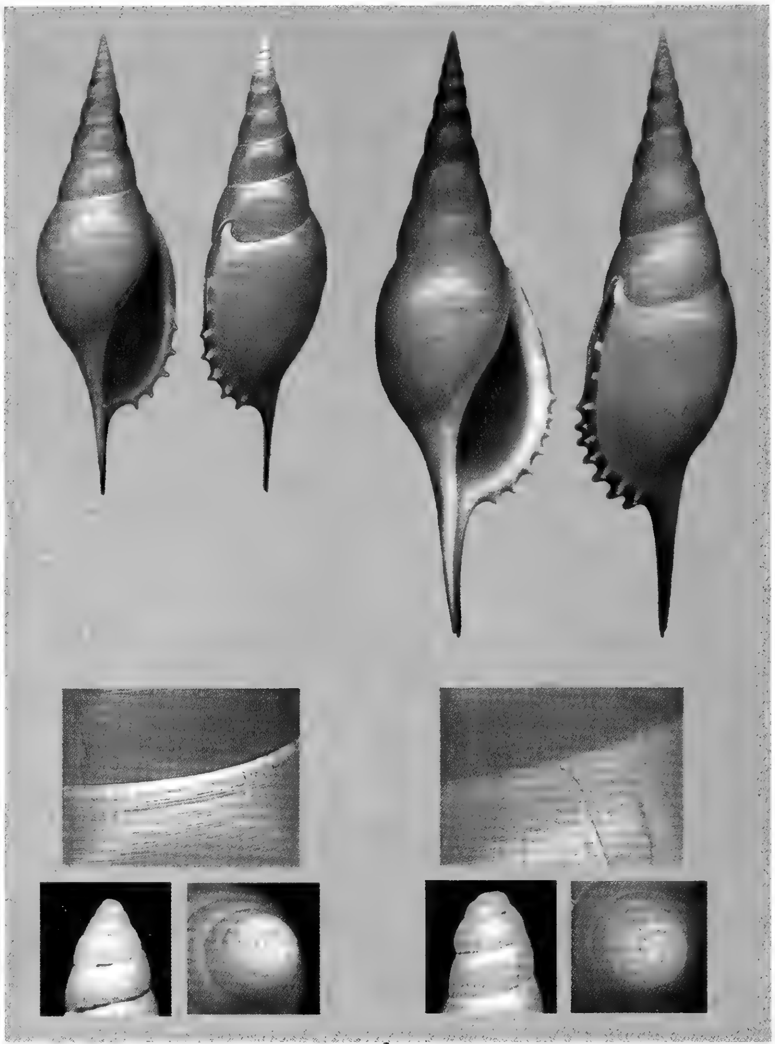
I still remember the first time I saw *Tibia martini* (Marrat, 1877). This was some 25 to 30 years ago and at that time it was still considered a fairly rare shell. I was amazed at how thin and light the shell was, nothing like the other members of this genus; it was more like a land snail! A similarly sized *Tibia insulaechorab* Röding, 1798 would be at least three or four times as heavy.

*T. martini* was described by Marrat from one of two specimens dredged from deep water near Cebu Island, Philippines. At the turn of the century there were still fewer than a handful of specimens and when S. Peter Dance wrote his wonderful book, *Rare Shells*, the shell was still a rarity with only a few found each year. He was prompted to say, "...*T. martini* is likely to remain an expensive shell." (Dance, 1969: 53) Within a decade (with the explosion of deeper water commercial fishing) hundreds of specimens were readily available.

I eventually obtained my own specimens and in the 1990s I saw a bin of *T. martini* for sale in a tourist shop on Rehoboth Beach, Delaware, for just a couple of dollars each; rare no longer. Then came the next surprise.

All of the specimens I had seen had been from the Philippines and had all been thin lightweight shells. But I saw a large specimen from the South China Sea offered and sent in my money. To my surprise, the specimen that arrived was totally unlike the typical *T. martini*. This shell was much larger, thicker, and heavier. I thought I had a new species or subspecies in hand!

While the two shells are indeed quite distinct, I was told by two dealers, Guido Poppe of Belgium and Hugh Morrison of Australia, that intergrades exist and that what we have is a single species that probably varies by habitat type. Of the readily available references, only Walls (1980: 52) and Springsteen & Leobrera (1986: 66) mention the existance of two forms (and this last reference considers the described form as a dwarf!). Others just state, "thin," (Eisenberg, 1985: 50) or "...very thin and glossy," (Kreipl & Poppe, 1999: 17). So for those who may not have seen both forms, here are two representative samples. Note the difference in shell thickness and weight (amazing even factoring in the size difference).



| *Tibia martini* (Marrat, 1877) | *Tibia martini* (Marrat, 1877) |
|---|---|
| **116mm** | **151mm** |
| **Philippines** | **South China Sea** |
| **Deep water** | **Deep water** |
| **1mm outer lip** | **3mm outer lip** |
| **0.5mm ½ inch inside lip** | **1.5 mm ½ inch inside lip** |
| **7.2 grams total weight** | **34.5 grams total weight** |
| **Weight to length ratio: 0.06 g/mm** | **Weight to length ratio: 0.23 g/mm** |
| **White subsutural band** | **No white subsutural band** |
| **Strong purple banding** | **Weak purple banding** |
| **5 outer lip digits** | **7 outer lip digits** |
| **Shallow spiral cording** | **Moderately deep spiral cording** |
| **Evenly tapered teleoconch** | **Unevenly tapered teleoconch** |
| **Small protoconch** | **Larger protoconch** |

**References:**


**Dance, S. Peter.** 1969. Rare Shells, Faber & Faber, Ltd., London, pp. 128.

**Eisenberg, Jerome M.** 1985. A Collector's Guide to Seashells of the World, McGraw-Hill, Ltd., New York, pp. 239.

**Kreipl, Kurt & Poppe, Guido T.** 1999. A Conchological Iconography: The Family Strombidae, Conchbooks, Germany, pp. 60, pl 130.

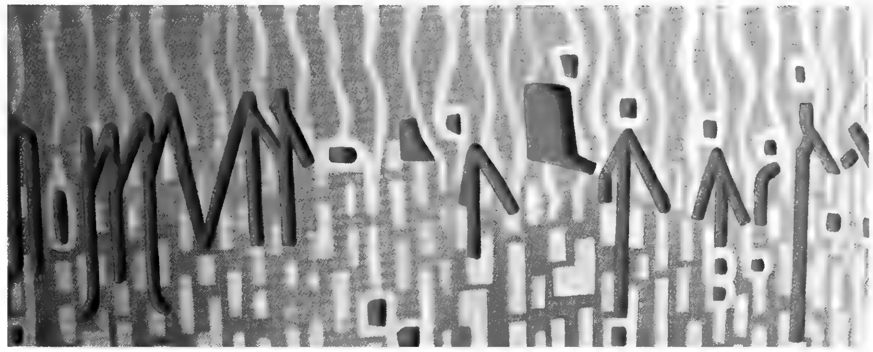
**Springsteen, F.J. & Leobrera, F.M.** 1986. Shells of the Philippines, Carfel Shell Museum, Manila, Philippines, pp. 377.

**Walls, Jerry G.** 1980. Conchs, Tibias, and Harps, T.F.H. Pub, Inc., pp. 191.

# The Art of Jan Huijbers

## by Tom Eichhorst

Jan Huijbers is a full time artist living in Taranaki, New Plymouth, New Zealand. Originally from the Netherlands, he left his European home in 1983 and immigrated to Aotearoa, New Zealand. He quickly settled in, adopting and adapting the varied Pacific influences into his art. He works in many mediums and with differing subjects, but all of the images presented here are either oil on canvas or acrylic, and reflect a seashell theme.



**Above: Oil on stretched canvas, "See People," an *Oliva incrassata* pattern (40 x 100cm).**

Jan's philosophy about his art may be inferred from his discription of one of his works seen here, "Ocean Script." He states, "The meaning of 'Ocean Script' is to make the viewer aware of the well being of the ocean. For me the ocean is the most beautiful thing in the world with all its blue and purity. Nowhere else are the colors so beautiful as here in the Pacific." His paintings shown here are influenced by different shell designs and colors and reflect his feelings for the ocean.

Jan has exhibited his art internationally and has been featured in a number of galleries and shows. In collaboration with Maori tribal chiefs and elders he was selected to create pre-European-contact Maori images for the Puke Ariki Museum. His art is shown here and on the back cover. More of Jan's art can be seen at: http://virtual.tart.co.nz/jan
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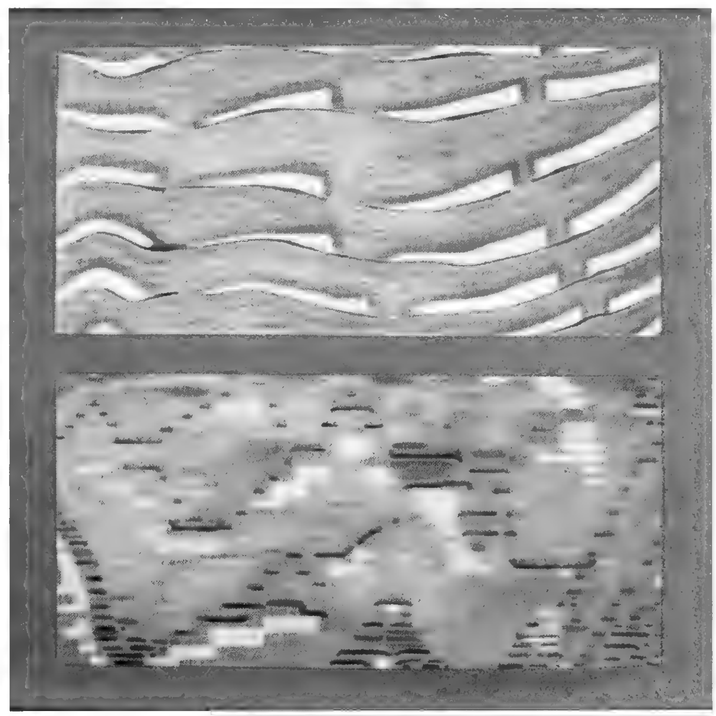
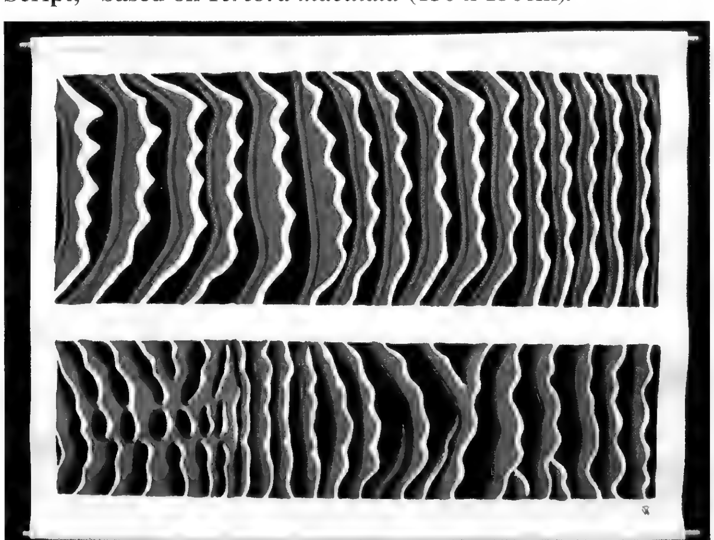
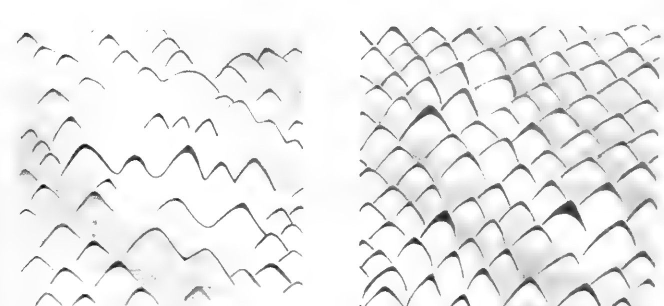


**Above: Acrylic on unstretched canvas, "*Smaragdia viridis*" (140 x 150cm).**

**Below: Acrylic on unstretched hand-stitched canvas, "Ocean Script," based on *Terebra maculata* (130 x 150cm).**



**Below: Acrylic on unstretched canvas, "*Neritina virginea*" (130 x 150cm).**



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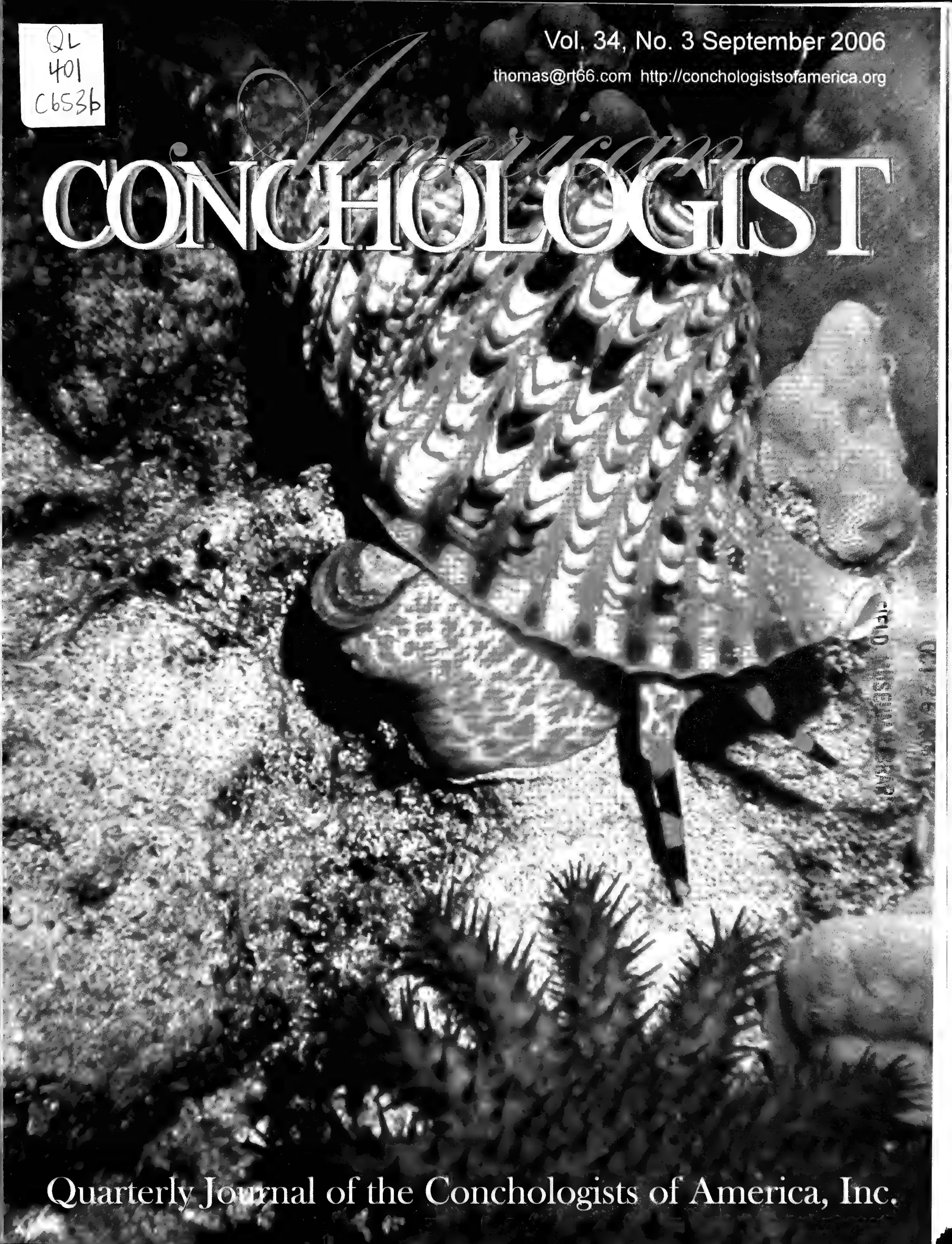
# American CONCHOLOGIST



Quarterly Journal of the Conchologists of America, Inc.

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 34, No. 3 September 2006**

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***

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**BACK ISSUES** are available from Hank Foglino, Properties Director. Prices: prior to 1985, $3 each, 1985 to current, $5 each; postage extra.



## AMERICAN CONCHOLOGIST

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**Front cover: *Charonia tritonis* (Linnaeus, 1758), the triton trumpet of the Indo-Pacific in pursuit of its prey, *Acanthaster planci*, the crown-of-thorns starfish or seastar. This impressive looking starfish can grow up to one meter in diameter and is a voracious eater of coral. The triton trumpet is one of the few predators of the crown-of-thorns starfish. Photo courtesy of Chris Takahashi of Hawaii.**

**Back cover: Tlingit mask of an *Ariolimax* slug. This mask was carved by Tommy Joseph from Sitka in 2005 for Neil Fahy (see story page 30). This side view of the slug mask shows the pneumostome, the opening through which the slug breathes. In the carving this "action place" has a face, like the faces at the ends of the tentacles.**

## Notes from the Editor

My first issue as editor of American Conchologist was September 2002. As I complete my forth year I thought it high time to publicly thank some of the people that make it possible to put out an all-color conchological journal. As much as I enjoy hearing someone say, "Nice issue," or "I really liked that article," I have to admit that there are many people who make this all possible.

First, I thank my many contributors. It takes a lot of work to prepare an article and put up with an editor's "help." I have been blessed with knowledgeable and talented authors, all of whom are willing to work with me as I suggest changes to fit my view of this magazine.

Next, and largely unsung, is an individual who provides a final proof of my work. Bruce Neville, a long-time friend and shell-buddy, goes through each issue doing a lot of mundane "comma chasing," but more importantly he ensures the science is correct and that we have the correct scientific names of each species referenced. His is no small task and we have many and sometimes-heated discussions as we try to get it right. I volunteered for my job, but Bruce just got roped in because he is a friend and because he supports COA (plus he reviews scientific literature professionally and was thus a perfect fit).

Another group involved in the scientific issues are the editorial board: Donald Dan, Emilio García, José Leal, Harry Lee, G. Thomas Watters, and Bruce Neville. When an article just does not quite fall into place, I have this great team of experts who willingly review any article I send them and provide clear input so I can decide whether or not to go to print. Without these experts we would have just a colorful newsletter.

I next send the "ready to print" magazine to Cardinal Printing. Holli Grant is our representative at Cardinal and she rushes a proof back to me so that I can confirm the copy will run as I want. This is my final check for errors and normally what I catch here are image problems that looked fine on the computer screen but are flawed once they are in print due to the higher resolution used. When I send the proof back Cardinal prints 1500 copies.

These 1500 copies are mailed to long time COA member Lynn Scheu who, with Lori Schroeder, is responsible for mailing each issue. It was Lynn who actually set up this process during her 16-year tenure as editor as she converted a newsletter into a respected journal. Lynn and Lori receive help from husbands Richard and Jeff, but the burden really falls on the gals. Just before they get the magazine, Doris Underwood (COA Membership Director) mails Lynn up-to-date labels. As you can imagine, with an organization as large as COA, membership is constantly changing and people keep moving and changing addresses. Doris tracks all of this and keeps us straight. Labels in hand, Lynn and Lori are now faced with several heavy boxes full of the *American Conchologist*. They must put each magazine in a mailing envelope, attach the label, add any inserts needed, sort this mess into stacks by zip code and overseas destinations, and haul it all to the post office. This process effectively kills an entire weekend before the trip to the post office! Once again, we have volunteers who want to support COA. In fact, when Lynn had her recent car accident and was physically unable to handle the magazines, Lori took on pretty much the entire job (thank you Lori!).

So the magazines are in the mail and we are done, right? Not quite. Steven Coker (COA Treasurer) has to make sure Lynn and Lori get the money needed for mailing and he has to pay the printers. Most excess magazines are mailed to Tom Grace (ex COA President) for storage, but some go to Hank Foglino (COA Property Manager) for back issue sales and some to Doris Underwood for retroactive memberships.

By my count this is some 15 people (not counting the folks at Cardinal Printing or our many contributors) who are responsible for getting *American Conchologist* out to our members. To each and every one of you I offer my heart-felt thanks. You are truly and deeply appreciated.

# About *Luria isabella controversa* (Gray, 1824)

## By
## Eduard Heiman

*Luria isabella* (Linnaeus, 1758) is a well-known and popular cypraeid from the Indo-Pacific. In 1824 John Edward Gray (1800 – 1875) described a cowrie species with *isabella*-like shells as *Cypraea controversa* and mentioned in the original description (based on two specimens), "two large brown spots, the anterior ones of which are sometimes influent, and form one dark brown crescent…" (Gray, 1824). Over 100 years later Schilder & Schilder (1938) used a specific name *Luria controversa* (Gray, 1824) for an *isabella*-like population group from the eastern Pacific Ocean consisting of two subspecies: *Luria controversa controversa* (Gray, 1824) with a distribution from Midway Island to the Hawaiian Islands and *Luria controversa mexicana* (Stearns, 1893) from Revilla Gigedo, Cabo San Lucas, Mazatlan, to Tres Marias, Clipperton Island, and Cocos Island. Later, in Schilder & Schilder (1952, 1971), the Schilders mentioned populations from the Hawaiian Islands as subspecies *Luria isabella controversa* (Gray, 1824) and treated the most eastern *isabella*-like population group as a species: *Luria mexicana* (Stearns, 1893), known today as *Luria isabellamexicana* (Stearns, 1893).

Kay (1979) and Burgess (1970, 1985) treated all *isabella* populations as a monotypic species, *Cypraea isabella* Linnaeus, 1758. Burgess wrote: "The Hawaiian variation, *Cypraea controversa* Gray, differs from other variations of *C. isabella* only by occasional larger size and presence of intensely black terminal spotting… In Hawaii can be found all the described 'races' of *C. isabella*."

Lorenz & Hubert (1993) considered that *L. isabella controversa* inhabits the Hawaiian Islands, Polynesia, and partly Melanesia, excluding Papua-New Guinea. Lorenz & Hubert (2000) maintained a similar approach and mentioned also a form '*atriceps*' from Polynesia and the Hawaiian Islands, which is "smaller, elongate, tips often very dark."

Okutani (2000) mentioned two subspecies from Japan: *Cypraea* (*Luria*) *isabella isabella* from "…Boso Peninsula on Pacific Coast and northern Yamaguchi Prefecture on Japan Sea coast, southward to tropical Indo-West Pacific" and "*Cypraea* (*Luria*) *isabella controversa* from Boso Peninsula, southward to Okinawa and Polynesia."

Most recently Lorenz (2002) treated *Luria controversa* as a monotypic species inhabiting Polynesia, the Hawaiian Islands, Taiwan, and Japan.

I conducted a conchological study in order to clarify the taxonomic identity of the Hawaiian *isabella*-like populations and try to answer the following questions:

—What is the taxonomic rank of the Hawaiian population groups: a separate species, a subspecies, or a form?
—What are the main diagnostic shell characteristics of this taxon?
—What is an approximate distribution range of this taxon, including species, subspecies, and forms?

While DNA analysis is slowly entering the picture, morphological differences or distinctions are still commonly used to distinguish between a given taxon and similar taxa to determine species. In other words species differ from other taxa by at least one essential consistent shell character without intermediates. Subspecies are geographically separated populations, the majority of which differ by at least one diagnostic shell characteristic from other populations groups of the same species.

The shells used for this study were obtained from local collectors and dealers during the last 10-15 years. This conchological material consists of many batches of shells from different localities. Shell characters used for comparison are illustrated in Figs. 1-10. The results of my study can be seen in Table 1, where three groups of *isabella* populations can be differentiated by shell characteristics.

In the first group, the Hawaiian population, the shells are generally narrower and higher and this fact can be used as the primary distinguishing shell characteristic at a subspecific level. This difference does not form a conchological gap because the range of variation for the shell length may be 10-12% or more and for W/L and H/L it may be 2-3% . Thus the shell length, W/L, and H/L of different population groups overlap. An additional shell characteristic of the Hawaiian population is the presence of large dark brown to black blotches on the orange terminal blotches. This character is much less frequent in other populations of the species. From this I concluded that the Hawaiian *isabella* populations can be treated as subspecies *Luria isabella controversa*.

In the second group, the populations of the western Indian Ocean including the Red Sea, the orange terminal blotches are mostly separate at the extremities and the dark brown to black blotches are generally absent. Shells with trapezoidal and slightly convex dorsums are commonly found in small numbers only in the western populations. This shell character is seemingly not shared by the majority of shells. This group can also be treated as a subspecies. The Schilders named it *Luria isabella isabella* (Linnaeus, 1758), the nominotypical subspecies.

The third group inhabits a vast area between the two subspecies mentioned above, as shown in Fig. 13. It forms, in fact, an intermediate zone between the two subspecies and has mixed shell characteristics of the two subspecies. I treat this group as *Luria isabella* in a broad sense, although this is only one of several possible options that deserve further investigation.

Shell characteristics may have different conchological "weight" or significance. For example, *isabella*-like shells from the eastern areas of the Pacific Ocean have brownish margins, whereas in all of the other *isabella* populations the margins are white. Based on this conchological difference, *Luria isabellamexicana* (Stearns, 1893) (Figs. 11-12) is currently treated as a valid species. But a color may fade with time or may vary depending on local conditions and I would not be surprised if in

**Table 1**
**The percentage of shells with a given quality in the studied samples of *L. isabella***

| ordinal number of columns → | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| number of studied shells → | | 116 | 124 | 98 | 23 | 174 | 197 |
| localities or subspecies → shell characters and forms ↓ | | Western Indian Ocean | Philippines | Hawaii | Tuamotu | Huahine-Tahiti | French Polynesia, total |
| the average shell | length, L mm | **27** | 26 | 22 | 25 | 21 | 22 |
| | width to length ratio, W/L % | 55 | 55 | **51** | 54 | 54 | 54 |
| | height to length ratio, H/L % | 44 | 45 | **47** | 43 | 44 | 44 |
| shell shape | subcylindrical Fig. 1 | 78 | 94 | 95 | 100 | 100 | 100 |
| | elliptical elongate Fig. 2 | 22 | 6 | 5 | 0 | 0 | 0 |
| shell profile | trapezoidal, flat dorsum Fig. 3 | 88 | 98 | 98 | 100 | 100 | 100 |
| | trapezoidal, slightly convex dorsum Fig. 4 | 12 | 2 | 2 | 0 | 0 | 0 |
| orange terminal blotches, % | all blotches separate Fig. 5 | **75** | 61 | 8 | 30 | 52 | 49 |
| | the anterior pair only confluent Fig. 6 | 24 | 34 | 30 | 48 | 43 | 44 |
| | each pair of blotches confluent Fig. 7 | 1 | 5 | 62 | 22 | 5 | 7 |
| dark brown to black center in orange terminals | absent Fig. 1 | **86** | 46 | 14 | 39 | 37 | 35 |
| | small Fig. 8 | 10 | 47 | 17 | 35 | 56 | 55 |
| | large, brown to black Fig. 9 | 3 | 7 | **69** | 26 | 7 | 10 |

the future someone studying large batches of *L. isabellamexicana* found a certain percentage of shells with white margins. If this happens, the eastern population groups might be treated as a third subspecies of *L. isabella.*

The terminal blotches may be light or dark orange, separate or confluent, and the dark blotches vary from light brown to almost black and may also fade with time. The dorsal color and pattern also vary. In the eastern populations the dorsum is typically grey tan with black lines and small spots, while in the western populations it is often beige to tan and the dark lines and spots may be absent (Fig. 10).

Another consideration is that unusual shells, differing from the typical shells of the population by certain shell characters, may often be found in given subspecies populations. For example, typical shells of *L. isabella controversa* have brown to black blotches at their extremities, but in a certain percentage of shells these blotches are absent. This does not mean that *L. isabella controversa* is not a true subspecies or that the unusual shells represent another species or subspecies.

The difference in diagnostic shell characteristics between geographically separated mollusc populations (subspecies) is usually prominent enough to demonstrate possible genetic changes occurring in those groups as a whole. If such a difference affects 2/3 or 70% or more individuals in a population (the majority), it is usually considered convincing for a subspecific rank (Mayr, 2000). Viewed from an evolutionary point of view, these isolated populations can be phylogenetically viewed as "…species not yet fully developed." (Schilder, 1960) It is thus important to recognize and differentiate the various populations of a group such as *Luria isabella.*

Study of intraspecific variation points out the difference and similarity between population groups. In practice, large dark terminal spots often characterize the Hawaiian *isabella* population. Similarly *Mauritia grayana* Schilder, 1930 is often diagnosed by the humped dorsum, and *Erosaria erosa* (Linnaeus, 1758) is often diagnosed by the presence of large dark dorsomarginal blotches visible from the base. These prominent shell characters can be used as diagnostic traits, but a statistical study is needed in order to check whether they belong to the majority of individual molluscs in a population. Humped shells can be found in most populations of *Mauritia arabica* (Linnaeus, 1758), and shells without dorso-marginal blotches can be found in certain populations of *E. erosa.* But "we do not combine two populations into one species because they are similar. Rather, we conclude that they are similar because they belong to the same species." (Mayr in Wheeler & Meier. 2000:25).

Diagnosing cowry species and subspecies requires different procedures. If one is trying to determine the taxonomic identity of a of batch shells at the specific level, it is usually enough to check whether all the examined shells conform to the main diagnostic shell characters given in the original description or in information gleaned from the literature. A subspecies should not be described from only several shells because one must determine both shell characteristics and geographical range in order to establish subspecific rank. In this effort, the more shells one uses, the more accurate the results. This is not, however, a question of quantity alone, because unusual or atypical shells will be sporadically found. The existence of geographically distinct populations must be demonstrated. In that case (as with the subspecies of *L. isabella*) it is may be acceptable to use a small number of shells for study. This is comparable to the spot checks used in industry for quality control where a few representatives of manufactured articles are examined to check the quality of the entire batch.

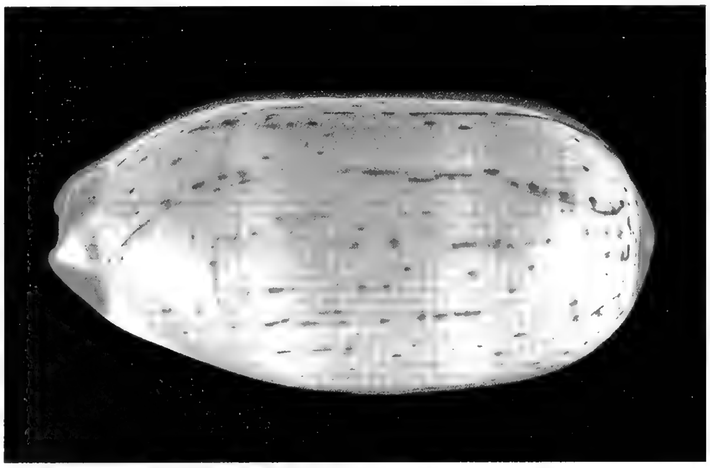


Fig. 1. Subcylindrical shell shape; *L. isabella s.l.*, Huahine, French Polynesia.

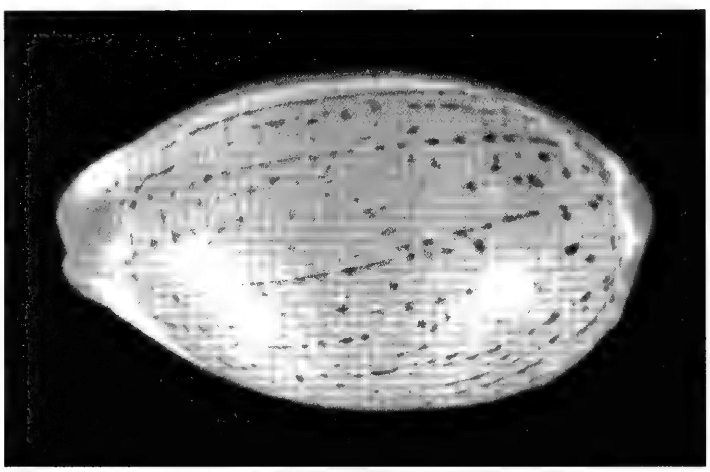


Fig. 2. Elliptical elongate shape; *L. isabella isabella*, East Africa.

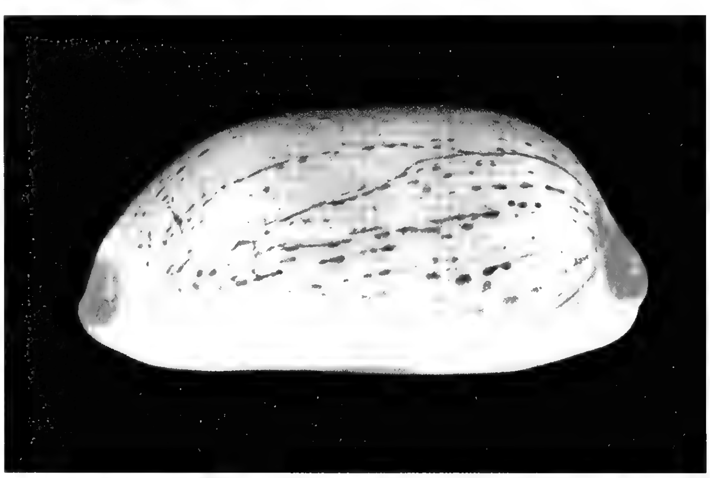


Fig. 3. Trapezoidal shell profile, flat dorsum, *L. isabella s.l.*, the Philippines.

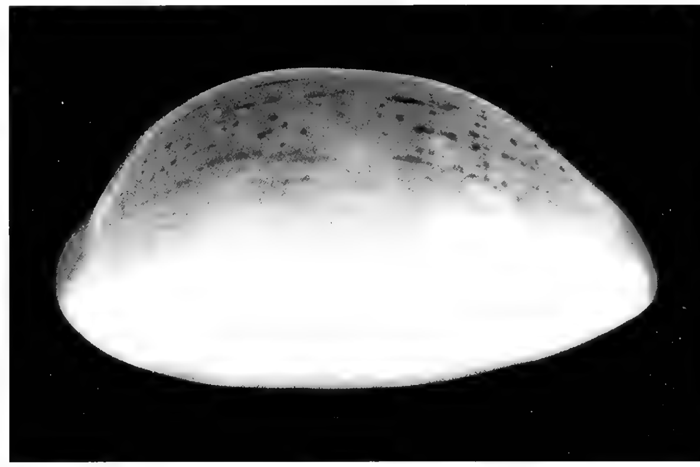


Fig. 4. Slightly convex dorsum; *L. isabella isabella*, East Sinai.

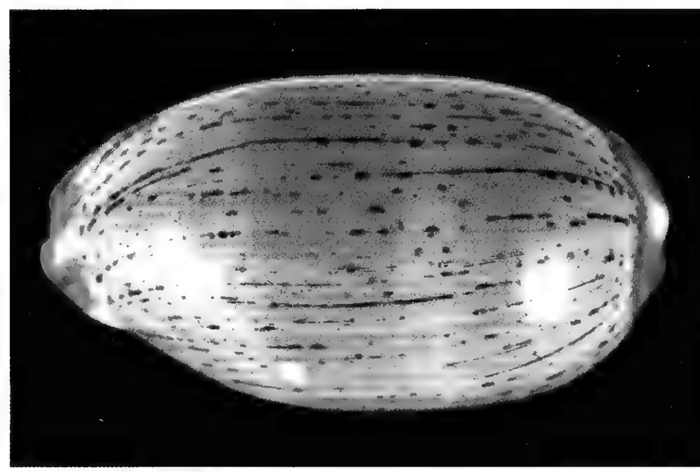


Fig. 5. All terminal blotches separate; *L. isabella s.l.*, the Philippines.

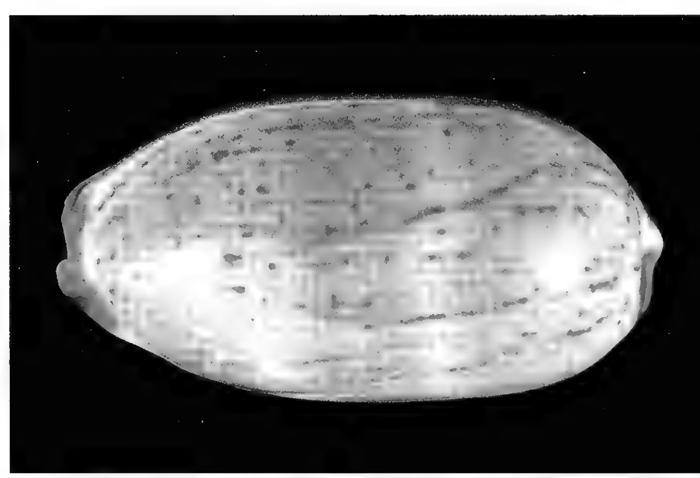


Fig. 6. Anterior pair of blotches confluent, *L. isabella controversa*, the Hawaiian Is.

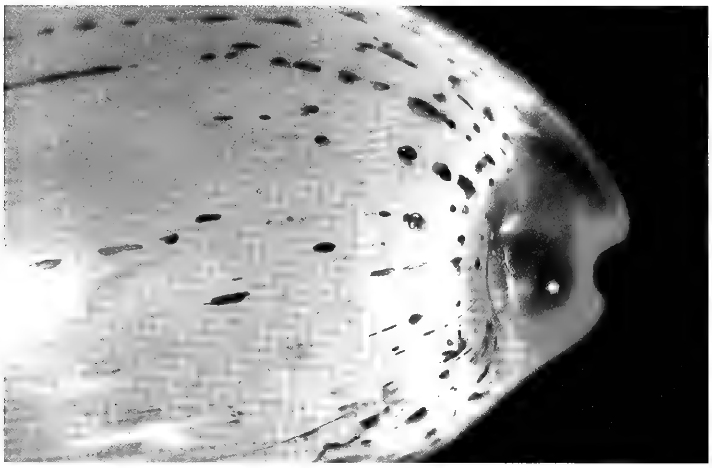


Fig. 7. Each pair of terminal blotches confluent; *L. isabella controversa*, the Hawaiian Is.

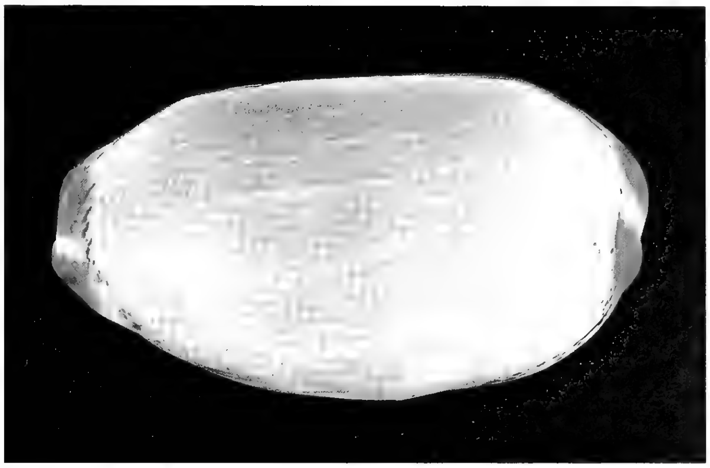


Fig. 10. Beige dorsum without black lines and spots; *L. isabella s.l.*, the Philippines.

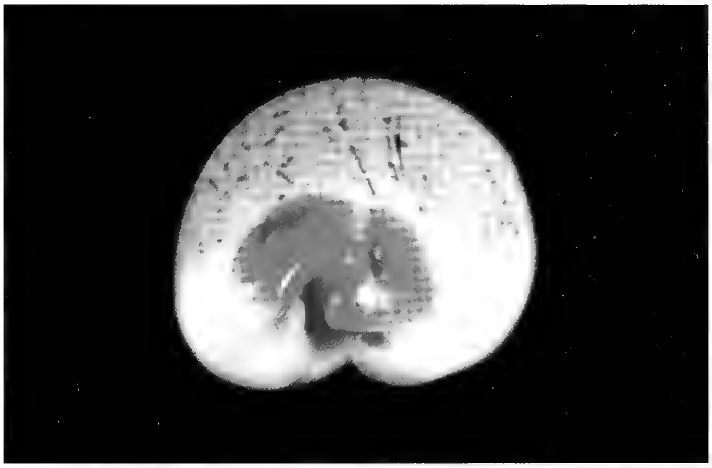
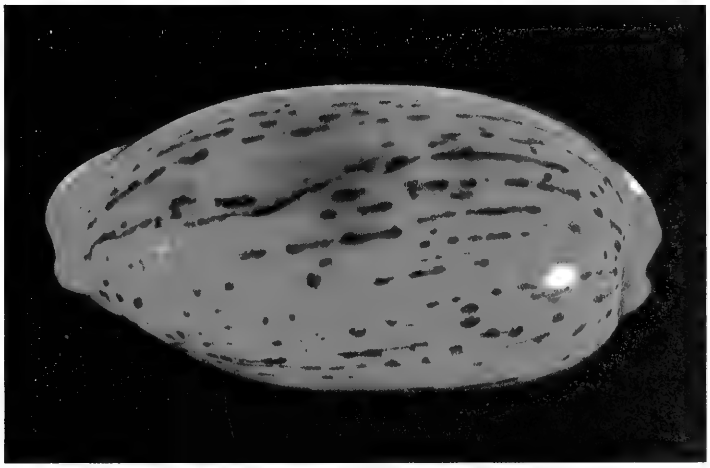


Fig. 8. Small dark brown to black spots, *L. isabella controversa*, the Hawaiian Is.



Figs. 11. *Luria isabellamexicana* (Stearns, 1893), Boyorena Reef, Panama.

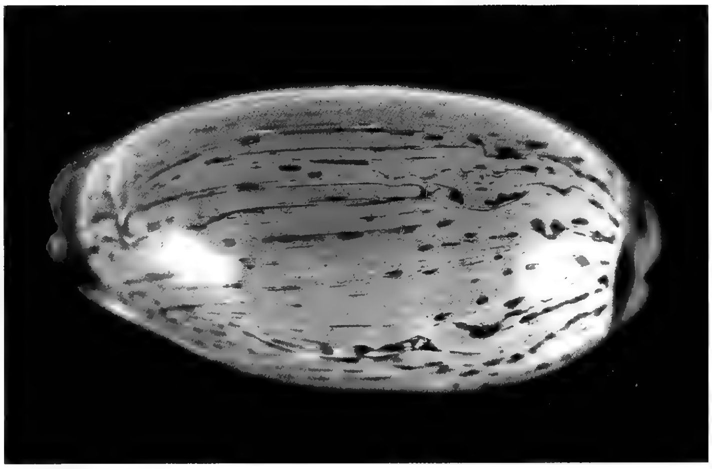
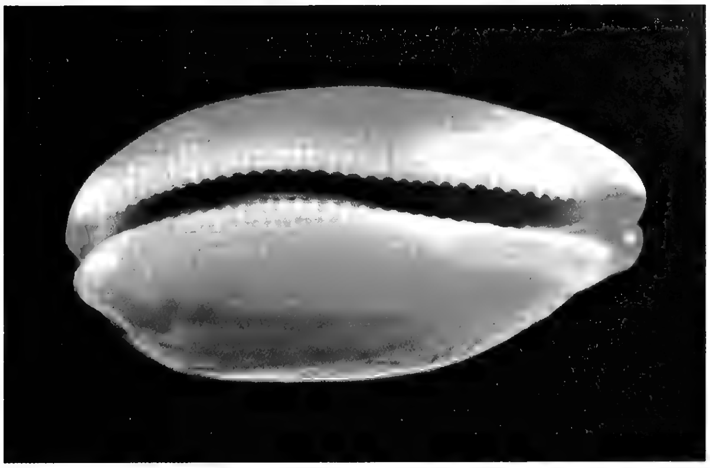
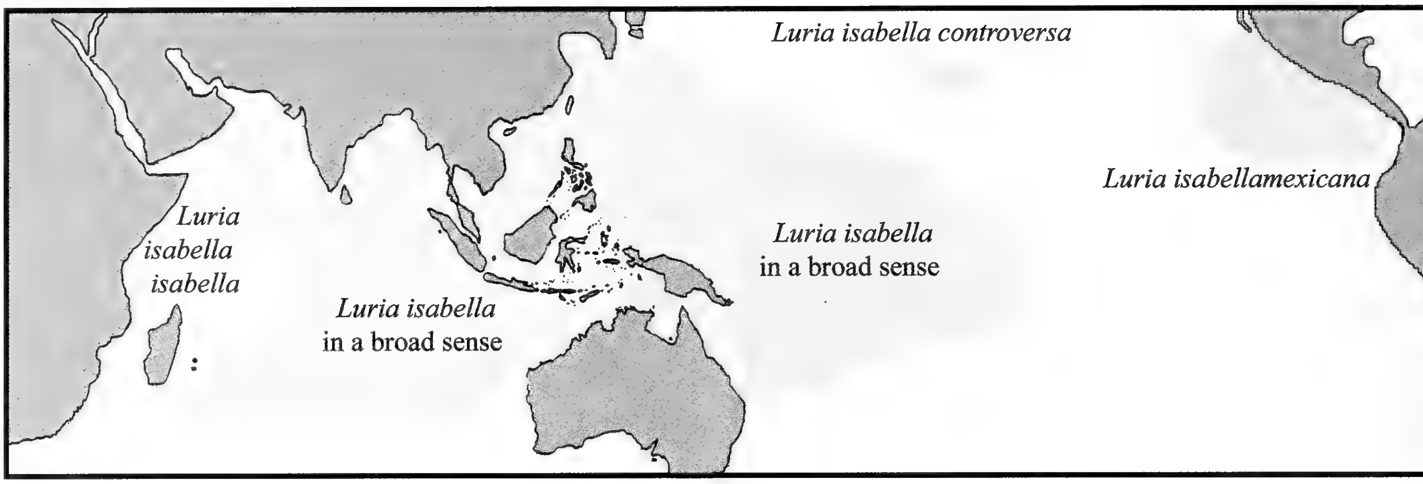


Fig. 9. Large dark brown to black spots; *L. isabella controversa*, the Hawaiian Is.



Figs. 11-12. *Luria isabellamexicana* (Stearns, 1893), Boyorena Reef, Panama.




**Approximate distribution range of *L. isabella*, *L. isabella controversa*, and *L. isabellamexicana*.**


Literature

**Burgess, C.M.** 1970. The Living Cowries, 389 pp. A. S. Barnes & Co., New York.

**Burgess, C.M.** 1985. Burgess' Cowries of the World, 289 pp. Cape Town, Gordon Verhoef, Seacomber Publications.

**Gray, J.E.** 1824. Monograph on the Family Cypraeidae, a family of testaceous Mollusca, The Zoological Journal, 1:71-80, 137-152, 367-391, 489-518.

**Heiman, E.L.** 2004. Diagnosing cowry species, Published privately, 160 pp.

**Kay, E.A.** 1979. Hawaiian Marine Shells, Reef and shore fauna of Hawaii, Section 4:Mollusca, Bernice P. Bishop Museum, Special publication 64(4):1-653.

**Lorenz, F.** 2002. New Worldwide Cowries, ConchBooks, Hackenheim, Germany. 292 pp.

**Lorenz F. & Hubert, A.** 1993. A Guide to Worldwide Cowries, 571 pp. Christa Hemmen Verlag, Wiesbaden, Germany.

**Lorenz F. & Hubert, A.** 2000. A Guide to Worldwide Cowries, 584 pp. ConchBooks Hackenheim, Germany.

**Mayr, E.** 2000. Systematics and the origin of species from the viewpoint of a zoologist. 334 pp. Harvard University Press,Cambridge, Massachusetts, London.

**Okutani, T.** 2000. Marine Mollusks in Japan, Tokai University Press, Tokyo. 1175 pp.

**Schilder, F.A.** 1960. Intraspecific taxonomy, The Cowry 1:8-10.

**Schilder F.A. & Schilder, M.** 1938. Prodrome of a monograph on living Cypraeidae, Proc. of Malacological Society of London, 23:119-231.

**Schilder F.A. & Schilder, M.** 1952. Ph. Dautzenberg's collection of Cypraeidae, Institute Royal des sciences naturelles de Belgique, Bruxelles. 243 pp. + 4 Plates.

**Schilder M. & Schilder F.A.** 1971. A catalogue of living and fossil cowries, Institut Royal des sciences naturelles de Belgique, 246 pp.

**Wheeler, Q.D. & Meier, R.** (Editors) 2000. Species concepts and phylogenetic theory, A debate, Columbia University Press, New York, 230 pp.



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# Jordan Star's Web Picks

3D Museum, http://3dmuseum.org/. Site is under construction so not all of it works correctly. I include it because it is a very interesting concept. There are links for Power Point development and possible inclusion into a presentation, it was not checked out. The University of CA at Davis is still working on this site. At the about us link, it is suggested the site be checked out occasionally, if you are interested.

Santa Barbara Museum of Natural History, http://www.sbnature.org/. Many links, museum store, planetarium, school programs, etc. Some shell pictures. Lots to look at. A 360 virtual tour of the museum halls. Well worth a visit or two.

Earth & Sky : Teachers' Articles, http://www.earthsky.com/teachers/articles.php?id=3&page=1. A long URL but if you stop typing after .com, you will get to the home page. An information page and pages (see page bottom for more links) for teachers and links for kids to learn about science. Of course as I have said before, kids will keep shell collecting alive.

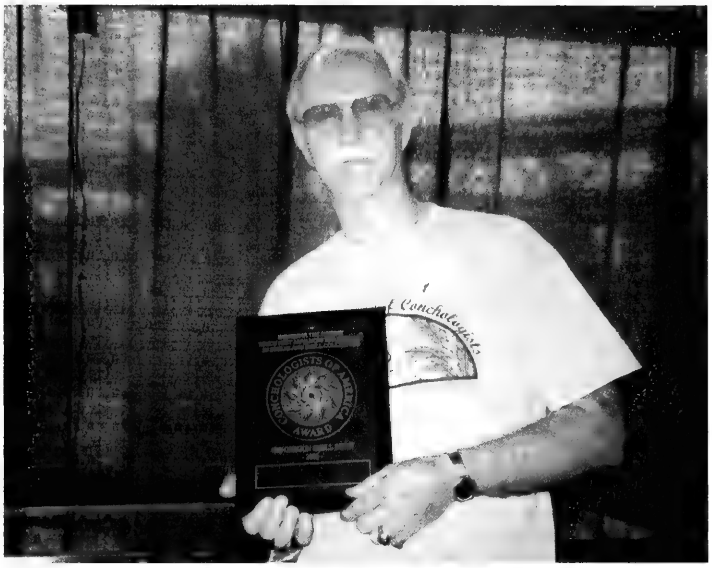
Beads from Seashells, http://www.thebeadsite.com/CHI-SS.html. A history of bead making among ancient people. A gallery of bead pictures.

El Campo Museum of Natural History: Seashells Collection, http://www.elcampomuseum.com/seashells.htm. Information about the shell collection at the El Campo Museum in TX. No pictures. Links to other areas of the museum. Other special collections besides shells.

National Park Service - Experience Your America, http://www.nps.gov/. If I counted right there are 10 National Seashores. Information on activities on all parks listed.

Links work, 8-26-06

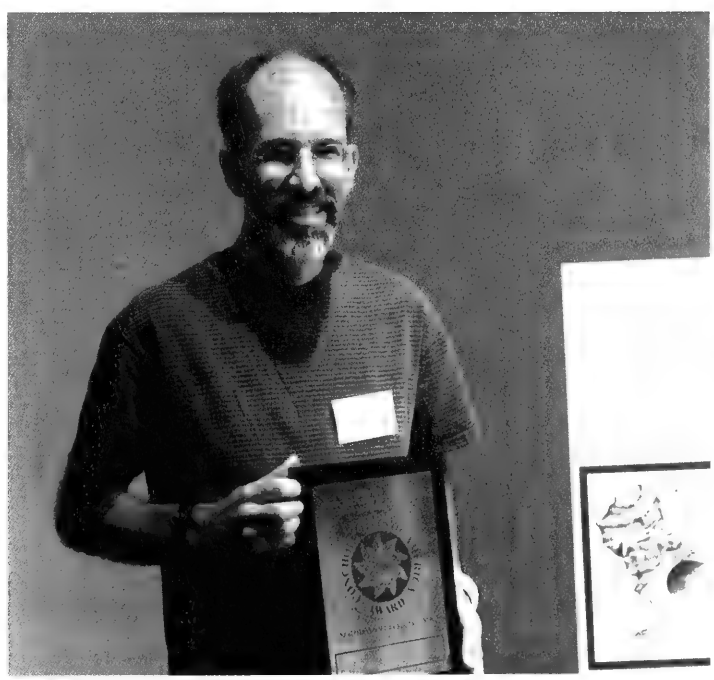
# COA Award Winners



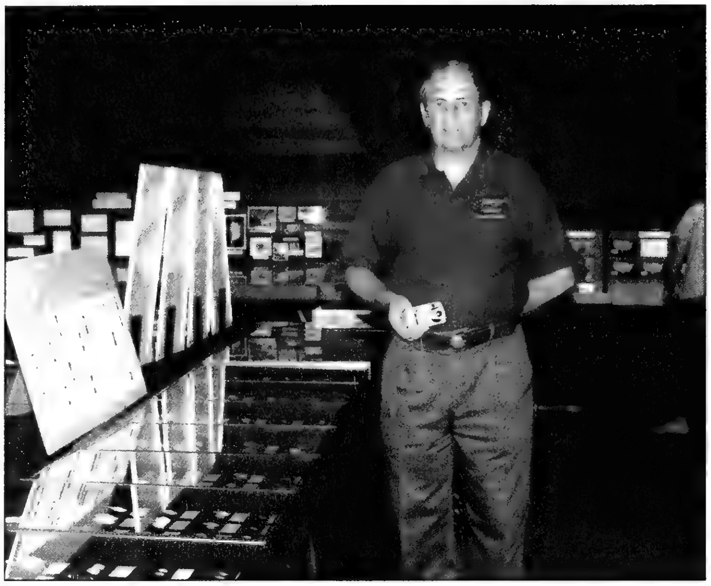

The COA award winner at the 40th **annual Oregon Museum of Science and Industry Shell Show, June 2005** was Kelly L. Timm from Salem Oregon. Kelly's exhibit was titled "Spider Conchs" and displayed all of the spider conch species along with color variations and educational material. Kelly had a single six-foot case. The judge was Raymond Wilson. Kelly is president of the Oregon Society of Conchologists and no stranger to the COA award, winning in 1997, 2001, and 2003. Plan on meeting Kelly and the other members of the Oregon Shell Club at the COA convention in Portland, Oregon, August 1-5, 2007.

Dot Higgs from Yeppoon, Queensland, Australia, won the COA at the **Keppel Bay Shell Show, July 2005,** with her exhibit "Shells and Animals." She exhibited various species of shells with photos of the live animal. This show had 11 judges.


Charlotte Lloyd Thorpe was the COA award winner at the **Jacksonville Shell Show, July 2005,** with "New Horizons in the Western Atlantic: A Glimpse Beyond Textbook Conchology." Her exhibit featured selected mollusks with range extensions, world record sizes, and various color forms. Charlotte had 26 feet of display in 10 cases. The judges were Kevan and Linda Sunderland.



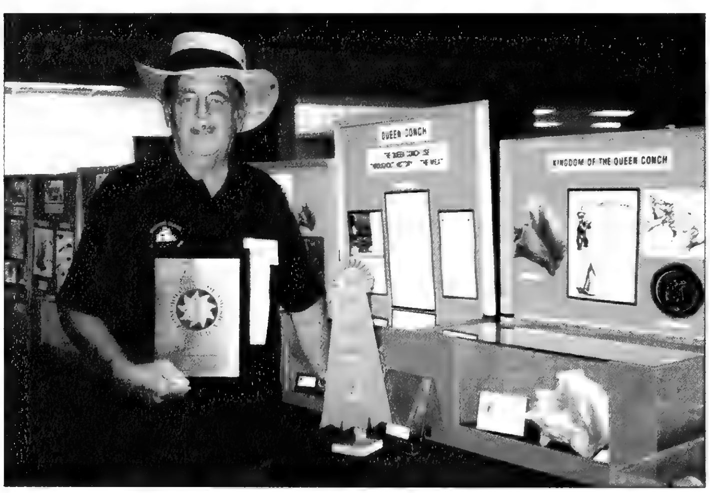
The COA award winner at the **North Carolina Shell Show, September 2005,** was John Timmerman from Wilmington, N.C. His exhibit was "Shells, An Artist's Perspective." John is an excellent artist and he approached his exhibit with an eye to form and design. Many of his original drawings were included in this exhibit. John had 22 feet of display in 6 cases. Kurt Auffenberg and Charlotte Thorpe were judges.



"Mitriform Mollusks" was the title of Gene Everson's winning exhibit at the **Philadelphia Shell Show, October 2005.** Gene had 29 feet of display in numerous cases showing miters and similarly shaped species with lots of educational information. Gene won the Masters Award from Astronaut Trail Shell Show in January 2006 with this exhibit.

(Sorry, no picture!)

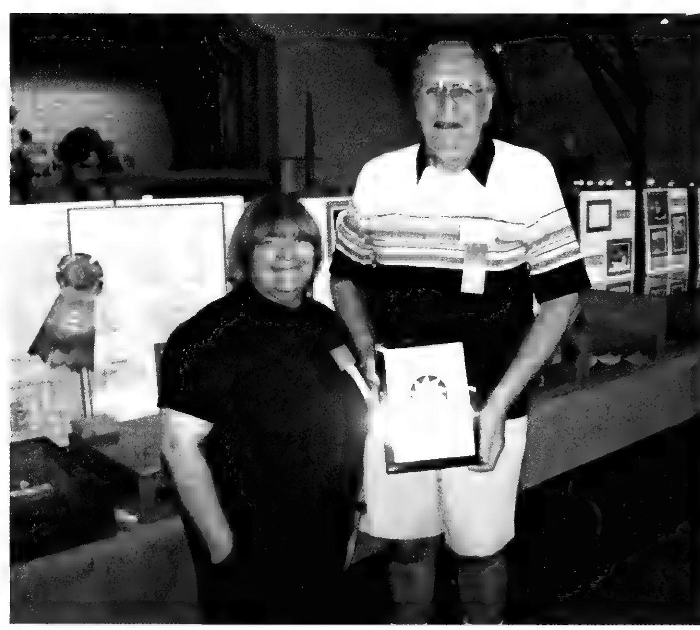
The winner of the COA at the **British Shell Show, October 2005,** was Sharon Crichton with an exhibit of "British Bivalves." She had a 4-foot case of specimens that included descriptions of the various families represented. The judges were John Witicher, John Batt, and Judith Nelson.




Jim VunKannon won the COA at the **Space Coast Shell Festival, January 2006,** with an exhibit on the queen conch titled, "Kingdom of the Queen." Jim had 12 cases totaling 28 feet of display on every aspect of the queen conch from food to pearls. His exhibit also included coins from various countries with an image of a *Strombus*. Jim had the shell of the show with one of the largest and most exquisite queen conchs the judges had ever seen. Jim won the DuPont award at the Sanibel Show in March with this exhibit. Judges were Homer Rhode and Don Pisor.


The COA winner at the **Broward Shell Show, January 2006,** was Gene Everson. No stranger to the Broward Shell Club, Gene was President in 1978 and again in 1982-84. He returned this year to scoop up the COA with "Conidae Worldwide." His 17-foot exhibit featured rare species of cones such as *Conus marielae, Conus gaugani*, and *Conus patae*. Gene also won two Shell of the Show awards for his *Aforia multispiralis* and *Mitra gausapata* (self-collected). Judges were Emilio García and Gary Smeltz.

Also at the Broward Show was the DuPont Trophy winner, Bob Pace, with "Paradise Lost," an exhibit detailing the area known as "Government Cut" in Miami from the early 1970's to the present. This was a real eye opener that highlighted the lack of pollution control in Miami and the resultant effects on the environment.

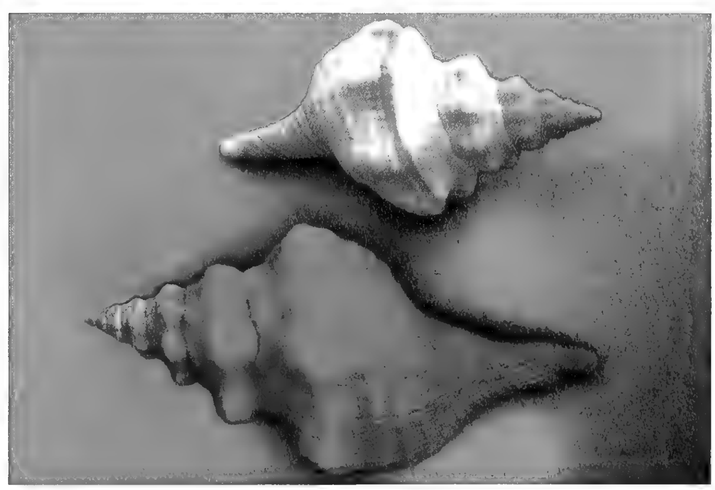


Harry and Lillian Berryman were the COA winners at the **Sarasota Shell Show, February 2006.** Their exhibit was "The Genus *Strombus*," with a display of over 200 specimens and 81 species. The exhibit totaled 32 feet of display in 16 cases and thoroughly detailed the genus *Strombus*. Judges were José Leal and Alice Monroe. This picture is of Alice Monroe and Harry Berryman.


Marilyn Northrop (whose *Babelomurex hirasei* graced last issue's cover) was the COA winner at the **Sanibel-Captiva Shell Show, March 2006.** In addition to acting as Shell Show Chairman, she found time to put together a COA award winning exhibit entitled "Muricidae: Limited Editions." The exhibit was 12 feet long with many extremely rare muricids. The Masters trophy was won by Bob and Alice Pace with their "Government Cut: Paradise Lost" exhibit. Judges were Dr. Gary Rosenberg and John Chesler.

The **Treasure Coast Shell Show, March 2006,** COA winners were Jeannette Tysor and Ed Shuller from Apex, North Carolina. Their exhibit was "Taking a Closer Look: Finding and Photographing Miniature Shells." This exhibit won the DuPont Award at the Philadelphia Shell Show and the People's Choice and Exhibitor's Choice awards at the North Carolina Shell Show. The 24-foot exhibit had some really lovely photographs of shells too small to really see without magnification. The judges were Harry Lee, Anne Joffe, and John Slapcinsky. John is curator at the Florida State Museum in Gainesville, Florida, and former curator at the Field Museum in Chicago. This was his first time as a shell show judge. Left to right in this photo are: John Slapcinsky, Jeannette Taylor, and Ed Schuller.

Amy Tripp figured out a way to glean some small benefit from the hurricane season and won the COA at the **Marco Island Shell Show, March 2006.** Her exhibit, "Kice Island, Florida, After Hurricane Wilma," showed some unexpected treasures. The exhibit featured over 8 1/2 feet of shells in 4 cases. Amy also won the Scribner's Trophy and the "Best Marco Island Shell trophy," with some unusual horse conchs (*Triplofusus giganteus* (Kiener, 1840)), one orange and the other white (see photo below). Judges were Bob Lipe and Bob Pace.



**Closing Note**

Please send your COA winning photos and the details of the competition to:

Carole Marshall
932 Cochran Drive
Lake Worth, FL 33461-5711
email: Marshalldg@aol.com

# Japanese Shell-matching Game

By
S. Peter Dance
Photos by Phil Dance

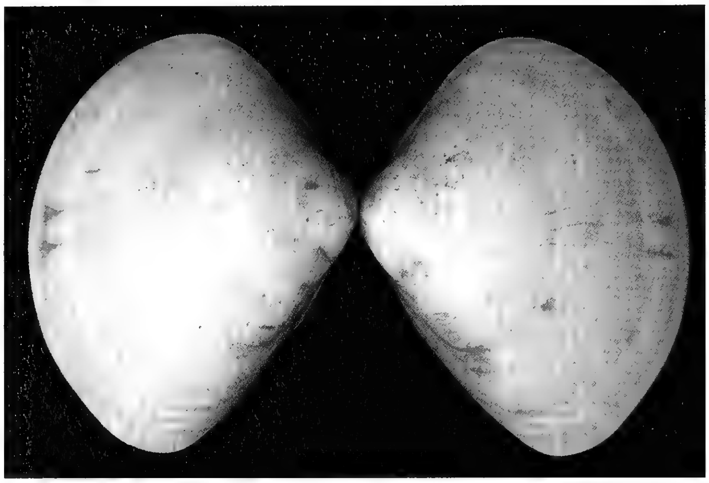


**Fig. 1: Outer view of paired valves of *Meretrix meretrix* (Linnaeus, 1758): 87mm diameter.**

I cannot resist antique fairs. Big or small, they seldom fail to amuse, instruct, enrich or impoverish me. Each one is an enticing Aladdin's Cave where I may find things rare, unique, beautiful, quaint, or odd. Mostly I look for objects associated with the shell world. I might purchase a piece of shell-oriented porcelain, a carved cowry, a cameo, or a mother-of-pearl brooch. Occasionally I find something unusual, new to me or unexpected. One day, at an antique fair held regularly near my home in the far north of England, I came away with a small paper-covered box containing three complete examples of a marine bivalve, *Meretrix meretrix* (Linnaeus, 1758). Found abundantly in far eastern waters, it is a rather featureless shell externally (Fig. 1). It does not seem to have a common name (and as *Meretrix* is Latin for a public prostitute I am reluctant to invent one now). I did not buy these shells for their external beauty, but because they were attractively painted internally. An identical oriental scene decorated the inside of each valve (Fig. 2). Many years earlier I had seen similarly decorated shells of this species in the ethnographical collection of the Manchester Museum.

A colour photo showing the shells in the Manchester Museum, neatly laid out below the elegant box that had contained them, is reproduced in Mary Saul's excellent book, *Shells* (1974, p. 100). A close-up photo shows the inside of a pair of valves, the scene on each essentially resembling that inside one of my matching pairs (each Manchester valve has four human figures, each of mine has two). Such painted shells are associated with a game popular long ago among ladies of the Japanese Imperial Court. Originally the game required 720 painted valves of which all but four had similar designs and could be paired (four had different designs and did not match). The valves were separated and divided into two piles, one pile being distributed equally among the players, the other being mixed up and spread out on the floor, painted sides downward. Starting together, the players turned the valves over and tried to match them up into pairs. The player who finished first was the winner.

Naturally, I was delighted with my purchase of some decorated shells, representing an ancient Japanese pastime. Two or three years later, at another antique fair in the same local venue, I spotted a single bivalve shell with an oriental scene painted on each valve. The shell, basically similar in shape to *Meretrix meretrix* but more equilateral, belonged to a closely related species from the Far East, *Meretrix lusoria* Röding, 1798), known as the poker-chip Venus (Fig. 3). I bought it from a dealer specializing in oriental antiques, paying much more for it than I had for the other three. This time the two oriental scenes differed and this puzzled me (Fig. 4). Fortunately, the Internet delivered some useful information about these as well as other aspects of the 'Shell-matching Game', or 'Kaiawase' as it is known in Japan.

Kaiawase, it seems, may have originated as long ago as the Heian period (8th to 12th century) in Japan, where it was popular with noble families and with children especially. Players would place the upturned valves on a red carpet and take turns selecting

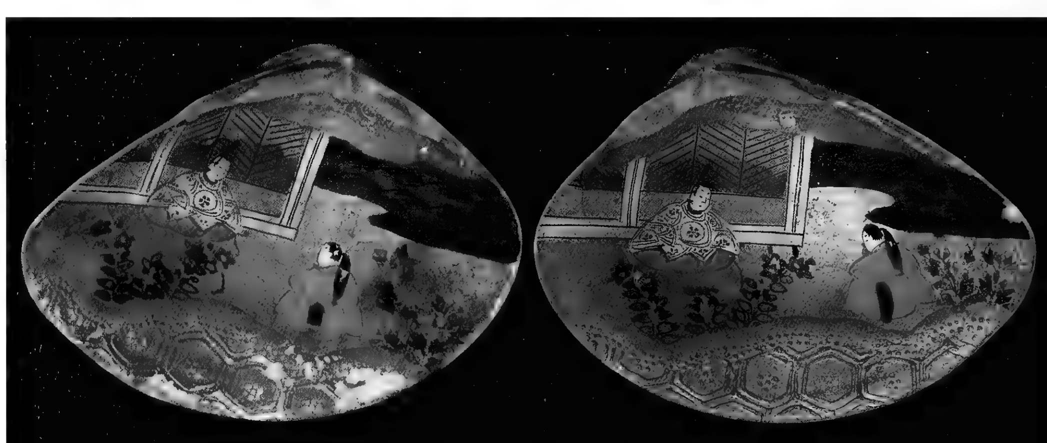


**Fig. 2: Inner view of the same valves of *M. meretrix*. The virtually identical pictures are painted on gilt paper, probably the work of the Tosa School of Artists at Kyoto, Japan.**

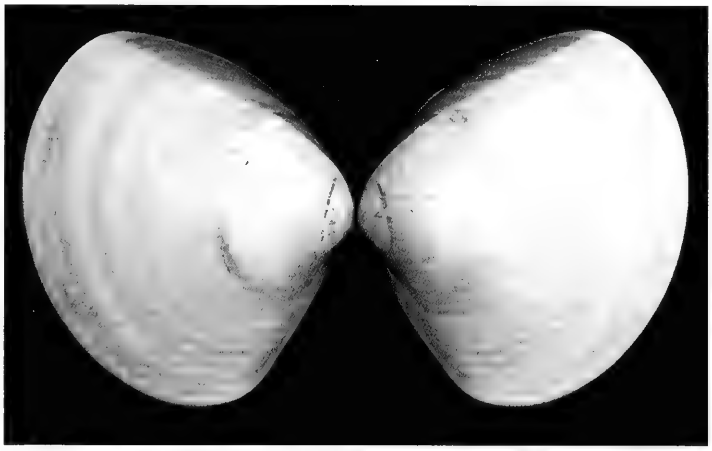


**Fig. 3: Outer view of paired valves of *Meretrix lusoria* (Röding, 1798): 87mm diameter.**

what they hoped would be a matching valve by comparing its surface markings with those of other valves. I discovered, too, that the Shell-matching Game, in one form or another, still has its devotees. Members of the Abiko Art Studio in Japan, for example, meet regularly to draw designs on clamshells and demonstrate Shell Matching to young and old alike. By contrast, the Denver Art Museum gives 'complex children' the opportunity to play a shortened version of the game, using sixteen pairs of clamshell valves decorated with details from its Japanese lacquer collection. I also found that decorated valves of the poker-chip Venus, similar to mine, are currently being offered for sale in Japan. Tourists visiting the Kiyomizu Temple in Kyoto Province, for instance, find them in the nearby souvenir shops.

Finally, is there a reason why the Shell-matching Game has been popular for so long and is now attracting new devotees far from Japan, the land of its origins? Is it because the inside of the valves are painted with attractive designs? I think not. In my opinion it is because one valve of a shell, such as the poker-chip Venus, fits snugly into its partner valve and cannot make an exactly matching pair with any other valve. Although tourists may disagree, that singular fact alone may account for the long continued and widening appeal of this ancient game.

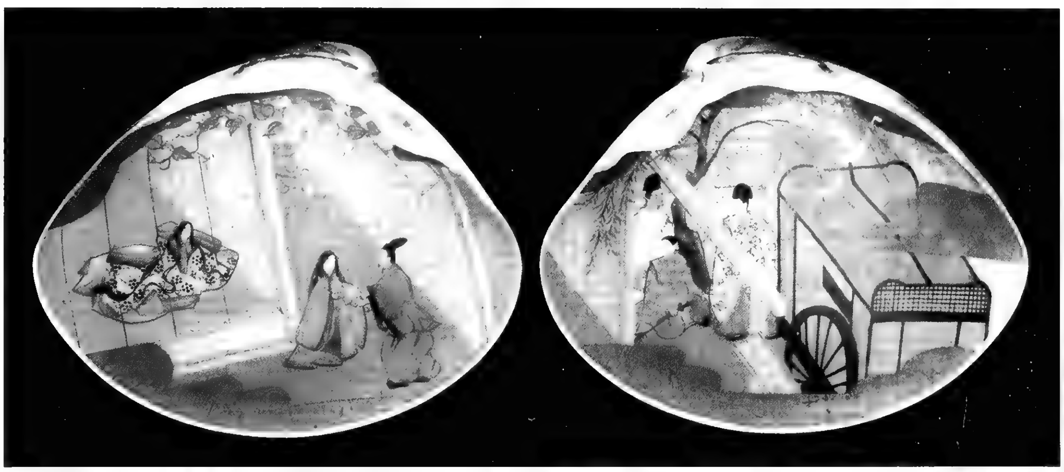


**Fig. 4: Inner view of the same valves of *M. lusoria*. The pictures are not identical and are painted directly onto the shell surface. Tourists may obtain similarly painted valves in Kyoto Province and elsewhere in Japan.**

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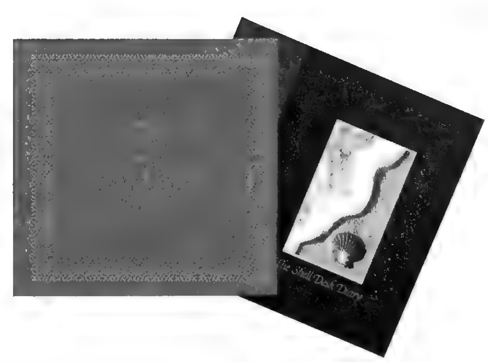
# *Shell Desk Diary*

## by
## Leslie Allen Crnkovic

Wondering where the Shell Desk Diary has been hiding? From 1961 to 1993 it was produced by Shell Oil. With the 1994 edition, Robert "Bob" Ashfield (Houston, Texas) took over publication (Ashfield & Assc. 1994, Rob Allen Press Inc. 1995-1998, Shellmark Press Inc. 1999-2002).

For many years the Desk Diary featured the works of internationally published photographer and author Lynn Funkhouser, and since 2003 it has been published through her company Sea Promotions and it is still printed right here in Houston, Texas. They also publish Sea Shell Wall Calendars and "My Journal" which is the same 7" x 7" Diary size with 160 ruled pages!

This historically collectable favorite is hot off the press and a beauty as always! This year's gallery theme is "Philippine Treasures." The cover is a deep maroon embellished with gold leaf embossing.



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Need a back issue? The publisher and I both have lots of them needing a new home!
Leslie Allen Crnkovic Leslie@harf.org

# New Shell Records for Florida

## By David Kirsh

You would think that Florida, shelling Mecca of the United States, would be thoroughly conchologically explored already. All of the shallow water species must have been named and photographed ten times over. Florida shells, ho-hum.

I admit I was a little jaded about intertidal collecting in the fewer and fewer available spots in southwest Florida. So I thought I should check out southeast Florida. In spite of the high density of population in southeast Florida, there are still some decent collecting spots along the shoreline.

If you go to diving depths, it turns out there are many shells that have not been recorded in Florida, even some that have yet to be named. The trick is to be willing to consider micro shells as legitimate shells. The problem with micros is that most collectors cannot see them. I believe when you see what they look like you will agree they are worth considering. I started with a handheld 15X lens, enabling me to appreciate the incredible details of the myriad shells under 7mm. Eventually, I got a digital camera with 6 megapixels and set it up with a bellows and a reversed lens. My new ability to send an image to the other side of the world by email attachment was a recreational epiphany.

Right off the shoreline of a congested urban area, Boynton Beach, I filled two zip-lock bags (somewhat less than 20 fluid ounces) with coral rubble grit while diving in about 70 feet of water. It didn't seem especially promising at first glance. Nevertheless, over the past year with careful sifting I have counted more than 195 species. The most frequent micro in the Boynton sample was *Caecum pulchellum* Stimpson, 1851, followed by juveniles of *Cerithium litteratum* (Born, 1778) and *Vermicularia knorrii* (Deshayes, 1843). Many species I found could be identified using Redfern's *Bahamian Seashells*, but it should be noted that two of the species found, *Simulamerelina caribaea* (d'Orbigny, 1842) and *Simulamerelina didyma* (Watson, 1885) are identified in the book as *Manzonia caribaea* and *Manzonia* sp. and are reversed on the illustration page (pl. 15, no. 129-130).

The species list here includes only those species not listed in the standard reference for shells of the United States, *Common and Scientific Names of Aquatic Invertebrates from the United States and Canada: Mollusks*, by Turgeon, Quinn, et al. (1998).

Thanks to Dan Geiger, Paula Mikkelson, Colin Redfern and especially Harry Lee for their generous expertise in making identifications. Thanks also to Bill Frank for patient and persistent help putting some of the images up on the jaxshells.org website.

**References:**

**DeJong, K.M., and Coomans, H.E.** 1988. Marine Gastropods from Curacao, Aruba and Bonaire, E.J. Brill

**Lipe, Robert.** 1991. Marginellas, The Shell Store.

**Olsson, Axel & McGinty, Thomas.** 1958. Recent Marine Mollusks from the Caribbean Coast of Panama with the Description of Some New Genera and Species, Bulletins of American Paleontology, 39(177).

**Redfern, Colin.** 2001. Bahamian Seashells, A Thousand Species from Abaco, Bahamas, Bahamianseashells.com, Inc.

**Turgeon, D., Quinn, J., Bogan, A., Coan, E., Hochberg, F., Lyons, W., Mikkelson, P., Meves, R., Roper, C., Rosenberg, G., Roth, B., Scheltema, A., Thompson, F., Vecchione, M., and Williams, J.** 1998. Common and Scientific Names of Aquatic Invertebrates from the United States and Canada: Mollusks, Second Edition, American Fisheries Society Special Publication 26.

**Species List** - Illustrated species are numbered and in **bold** type.

*Sinezona redferni* Rolán, 1996

**1. *Skenea* sp. of H. Lee**

**2. *Simulamerelina caribaea* (d'Orbigny, 1842)**

**3. *Simulamerelina didyma* (Watson, 1885)**

**4. *Rissoina angeli* Espinosa & Ortea, 2002**

**5. *Rissoina elegantissima* (d'Orbigny, 1842)**

*Teinostoma proboscidea* Aguayo, 1949

**6. *Pleuromalaxis pauli* Olsson & McGinty, 1958**

*Circulus* sp. (of Redfern, 2001)

*Lodderena* sp. (equally planispiral but not *L. ornata*)

**7. *Caecum circumvolutum* de Folin, 1867**

**8. *Caecum debile* A.E. Verrill and Bush, 1900 [sensu deJong & Coomans, 1988]**

**9. *Caecum marmoratum* de Folin, 1870**

*Caecum striatum* de Folin, 1868

**10. *Megalomphalus pilsbryi* (Olsson & McGinty, 1958)**

**11. *Cerithiopsis buijsei* de Jong & Coomans, 1988**

**12. *Cerithiopsis vicola* Dall & Bartsch, 1911 [sensu Redfern, 2001]**

*Cerithiopsis* cf sp. C [Redfern, 2001]

**13. *Metaxia excelsa* Faber & Moolenbeek, 1991**

*Isotriphora peetersae* (Moolenbeek & Faber, 1989)

**14. *Triphora ellyae* deJong & Coomans, 1988**

**15. *Triphora elvirae* deJong & Coomans, 1988**

**16. *Triphora osclausum* Rolán & Fernández-Garcés, 1995**

**17. *Eulimostraca* sp. A of Redfern, 2001**

**18. *Eulimostraca* sp. of H. Lee**

*Oceanida faberi* deJong & Coomans, 1988

*Astyris antares* (Costa & Souza, 2001)

*Steironepion maculatum* (C.B. Adams, 1850)

**19. *Zafrona* sp. 2 of Redfern, 2001**

**20. *Gibberula* sp. D [of Redfern, 2001]**

*Granulina* sp. 17 of Lipe

**21. *Crassispira adamsi* deJong & Coomans, 1988**

*Agathotoma trilineata* (C.B. Adams, 1845)

*Ammonicera albospeciosa* Rolán, 1992

**22. *Ammonicera lineofuscata* Rolán, 1992**

**23. *Murchisonella bermudensis* (Dall & Bartsch, 1911)**

**24. *Larochella ambigua* (Weisbord, 1962)**

**25. *Chrysallida* (?) sp. aff. *toroensis* (Olsson & McGinty, 1958) (not reported before)**

*Egila ektopa* Pimenta & Absalao, 2004

**26. *Fargoa buijsei* deJong & Coomans, 1988**

**27. *Menestho* sp. C of Redfern, 2001**

**28. *Nannodiella oxia* (Bush, 1885)**

**29. *Turbonilla abrupta* Bush, 1899**

**30. *Turbonilla* cf. *abrupta* Bush, 1899**

**31. *Turbonilla fonteini* deJong & Coomans, 1988**

*Turbonilla* sp. G of Redfern, 2001

**32. *Turbonilla unilirata* Bush, 1899**

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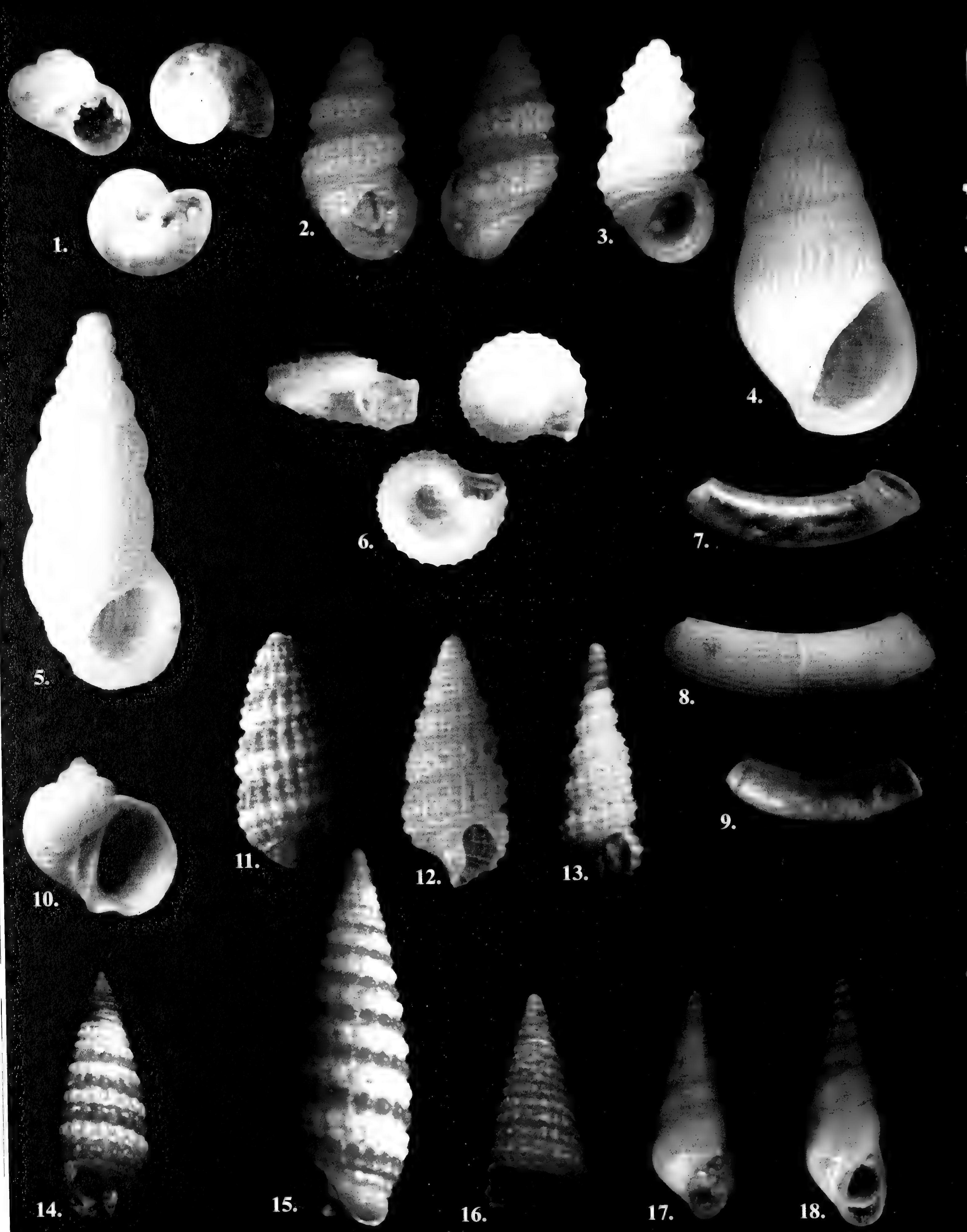
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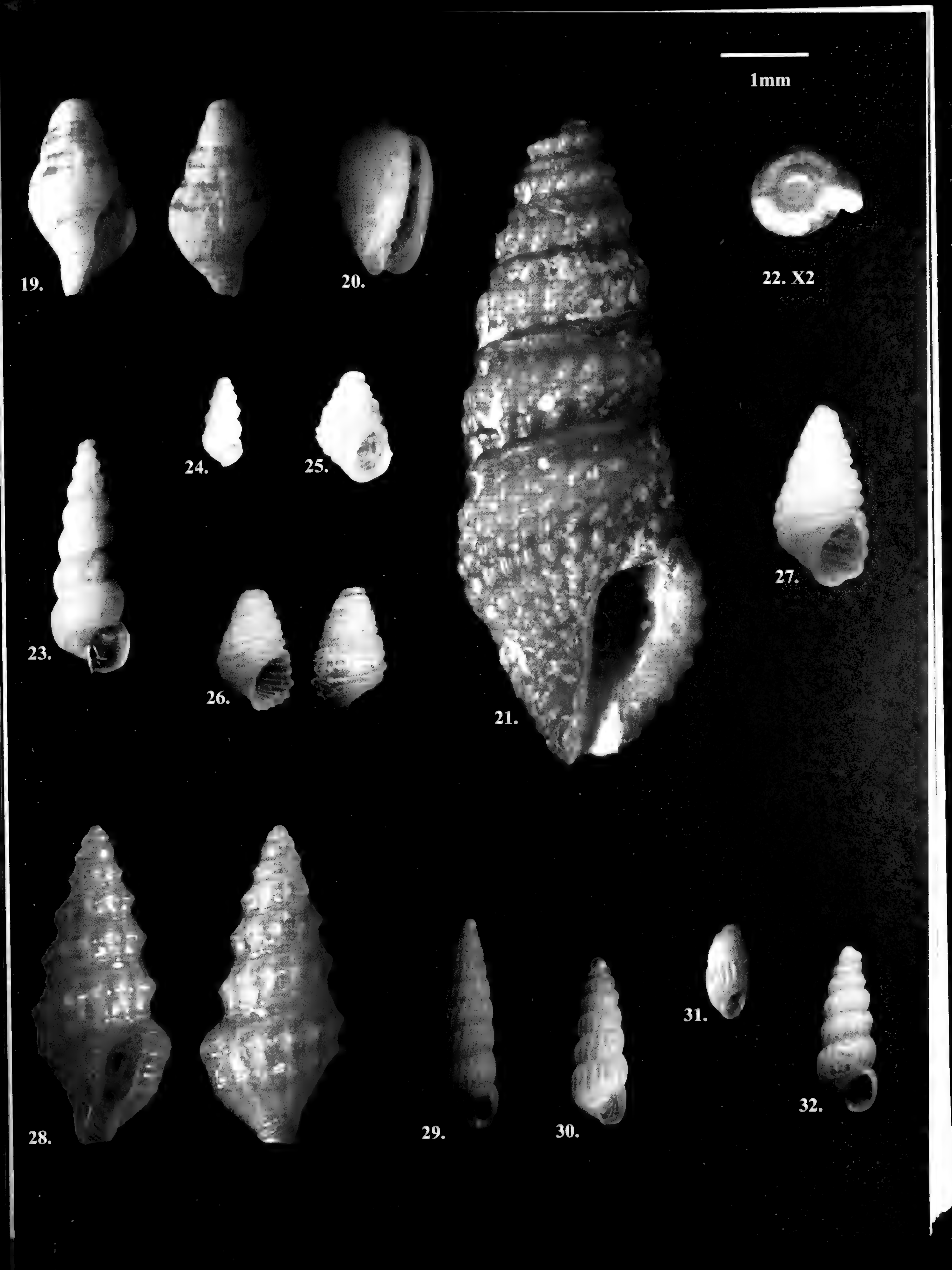
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# "Chardonnay & Shells" in Portland, Oregon

## August 1 – 5, 2007

### By Joyce Matthys
### Convention Chairperson

In the June issue of the *American Conchologist*, the Oregon Society of Conchologists extended an invitation to members of Conchologists of America to come to Portland for the Annual Convention, August 1 – 5 with pre-convention field trips on July 30 and 31. If the number of hotel rooms already reserved at the Monarch Hotel & Conference Center is any indication, our invitation has been well received.

Our convention site is a locally independently owned and operated hotel with a reputation of service and hospitality. Standard rooms are $94.00 plus 7% tax. If you prefer to stay on site for the convention, I recommend you make your reservation as soon as possible. At this time less than 75 rooms remain available, but the Monarch also owns two other properties that are an easy walk from the hotel. A shuttle service will be offered between the three facilities. You can reserve your room using a credit card now and no charges will be made to your card until your arrival in Portland. Within the United States you may make your reservation by calling 1-800-492-8700. From outside the U.S. call 503-652-1515. Be sure to identify yourself as a COA member.

**The Monarch Hotel**

**Field Trips on July 30 & 31**

By request from COA members at the Mobile convention, we will offer field trips on two days prior to the convention instead of one. The cost of each trip and additional information will be announced in the next issue of the *American Conchologist.*

**Oregon Coast Shell Collecting Trip**

The dates of the convention were chosen to coincide with one of the lowest tides of the year so that we could offer a shell collecting field trip at the Oregon Coast. The good news is that low tide on the morning of our shell collecting trip is one of the lowest of the year. The bad news is that Portland is approximately 2 ½ hours from where we will collect and low tide is at 7:53 AM. If you do the math you will see that we will be leaving the hotel very early. The hotel will provide coffee and breakfast for us to take on the tour bus.

Most of Oregon's beaches are rocky and that is where the best shells can be found. Our collecting will be done along the rocks and in tidal pools at Seal Rock State Park south of Waldport. Live collecting of chitons and snails is permitted without a permit. Collecting of mussels and some other bivalves requires a permit that can be purchased prior to the trip. A volunteer with the Oregon Park Service will meet us on the beach and be available to answer all your questions about Oregon's mollusks and other sea creatures.

**Cannon Beach West of Portland**

The water's edge at Seal Rock is about 150 feet below the parking lot and a sloping asphalt trail takes you to the beach. Shell collecting means walking on the slick seaweed and kelp covered ocean floor, so you will want to be prepared with proper footwear. It is not a question of if you might slip, but rather when you will slip. If it happens to be hot in the valley it is almost certain to be extra cool on the coast, so plan to pack some jeans, a sweatshirt, and a windbreaker.

After shelling we will have lunch and proceed to the Oregon State University Marine Science Center in Newport and/or visit the Oregon Coast Aquarium. This will be a full day tour.

**Fossil Collecting Trip and/or Sightseeing Trip**

Although this is a marine fossil collecting expedition, it will also be considered a coastal sightseeing trip. We will drop the fossil collectors at their site and then continue on down the coast to check out many of the viewpoints. Once again, we will be leaving the hotel in the early morning to coincide with the tide.

Our destination will be somewhere between Fogerty Creek State Park and the Yaquina Head Lighthouse. "The Fossil Guy," an expert on Oregon marine fossils, will meet us there and act as an additional resource person and guide. The collecting area will be easily accessible.

Oregon State Law prohibits digging into cliffs so don't plan to bring picks or shovels. Geology hammers and like tools may only be used on the rocks and boulders at the bases of cliffs. Surface collecting is always a great source of marine local fossils.

After spending the morning collecting, we will have lunch and then visit the Oregon State University Marine Science Center and/or the Oregon Coast Aquarium. This is a full day tour.

**Mt. St. Helen's showing some activity**

### Mt. St. Helens Tour

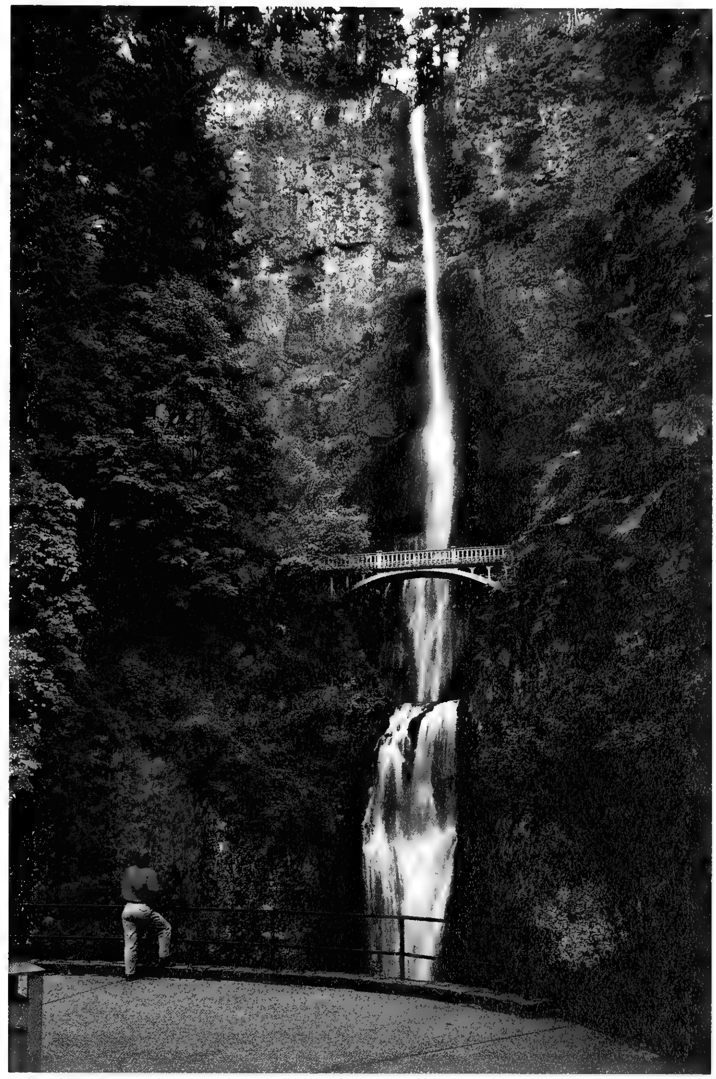
Only an hour's drive north of Portland, Mount St. Helens is a natural wonder that should not be missed during your visit. Known for it's spectacular eruption in 1980, Mt. St. Helens continues to show off the massive geologic activity. A tour to Mt. St. Helens and the visitor's centers will help you understand the magnitude of its volcanic eruption in 1980. You will witness the current activity that is rebuilding its peak and see the wonderful recovery of plant and animal life.

There are four visitor centers in the National Monument. As you travel from one to the other, each will give you a different view of the mountain. When you reach the Johnston Ridge Observatory, you will be only 5 1/2 miles from the crater.

### Mt. Hood Loop Tour

When travelers think of Oregon, there are certain landmarks that immediately spring to mind. They are the awe-inspiring Columbia River Gorge and the majestic symmetrical splendor of Mt. Hood. This drive through the gorge and around Mt. Hood is often referred to as "The Infinity Loop."

The first stopping point is the Vista House at Crown Point State Park standing 733 feet above the Columbia River. Leaving this viewpoint you will follow the Historic Columbia River Highway past numerous waterfalls to Multnomah Falls, the second highest year-round falls in the United States. There is an easy tree-lined asphalt trail that takes you to the bridge over the lower falls. If you would like to return for a longer hike on your own, you can follow the trail to the top of the falls.



**Multnomah Falls 30 miles east of Portland**

The next stop will be the Bonneville Dam and fish hatchery where you can see the ladders that the fish use to circumvent the dam. You will see the fish counting station that is manned from 5:00 am to 9:00 pm March 15 to November 15. You will pass beautiful flowerbeds when you walk to the sturgeon pond where you can watch these huge fish from above the pond or through special viewing windows. One large sturgeon is 8 – 9 feet long and is approximately 90 years old.

From the dam you will travel to Hood River, referred to by folks in the know as the unofficial windsurfing capital of the world. Leaving Hood River you will drive past numerous fruit orchards as you head towards beautiful Mt. Hood where summer skiing and snowboarding attracts sports enthusiasts from around the world.

Mt. Hood is the second-most climbed mountain in the world, after Mt. Fuji in Japan. It is the highest peak in Oregon and wears a blanket of snow year round. You will visit historic Timberline Lodge where you can take time to make a snowball as you watch skiers and snowboarders on the upper slopes. The view is wonderful. This is a full day tour.

**Picking grapes at an Oregon winery**

### Wine Tasting Tour

There are over 200 wineries in the Willamette Valley and obviously we can't visit all of them, so we are choosing two that we think you will enjoy.

Oregon wines are earning the reputation as being some of the best in the country and, in fact, are winning awards around the world. Our wine tour will take us to different parts of the Willamette Valley. You will be sure to enjoy the scenic drive between these hilltop wineries as well as the views from the wineries themselves. The wineries offer tours of their facilities and wine tasting. This tour will take the better part of the day.

### Pre-convention Alaska Cruise

During the 2006 convention in Mobile, a number of people asked about the possibility of having a pre-convention Alaskan cruise. Susi Muggia at AC Travel in Bend, Oregon suggested that the COA members consider traveling with Celebrity Cruises aboard the *Mercury* on their Seven Night Alaska Hubbard Glacier Cruise.

The ship departs from Seattle on July 20th at 4:30 PM and returns on July 28th at 7:30 AM. Stops during the cruise include Juneau, Skagway, Hubbard Glacier, Ketchikan and Prince Rupert.

Outside cabins based on double occupancy are $1110.00 per person plus $263.65 taxes per person. Inside cabins based on double occupancy are $800.00 per person plus $263.65 taxes per person. These prices include shipboard accommodations, ocean transportation, most meals, some beverages and most entertainment aboard the vessel. Not included is air transportation, transfers, travel insurance and items of personal nature such as shore excursions, specialty restaurant fees, some beverages, photographs, gratuities/service fees, medical services, AquaSpa services, etc.

At the present time, 12 cabins, six outside category 7 cabins and six inside category 11 cabins, are being held by AC Travel for COA members. A $500.00 deposit per cabin is required by October 28, 2006 with the final payment to be made by May 2, 2007.

For additional information, contact Susi Muggia at actravel@bendcable.com or by phone at (541) 317-2961.

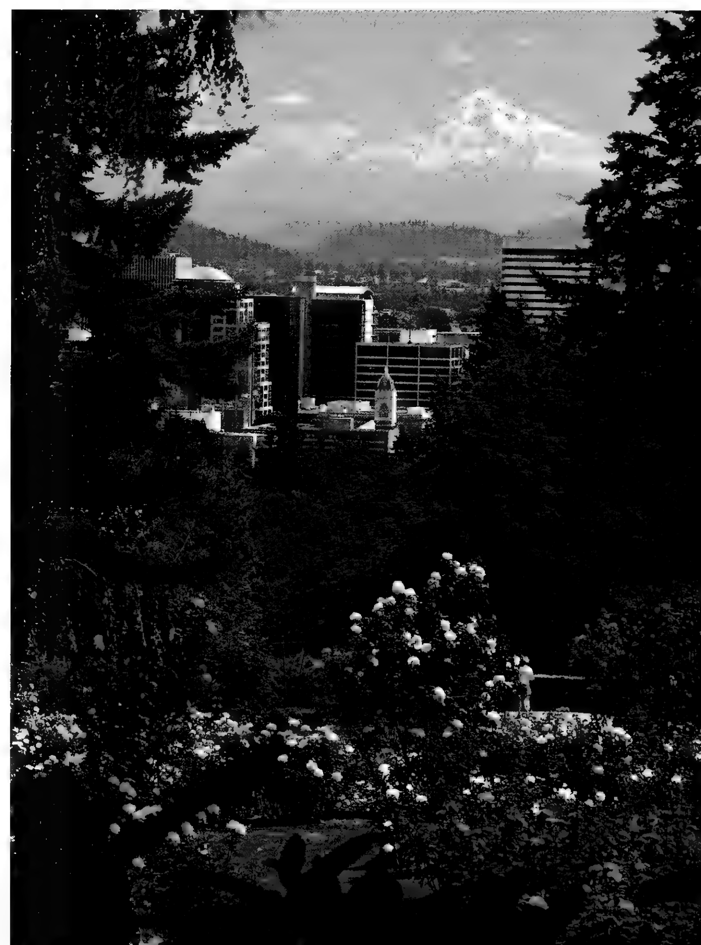
### A Week in Fiji Will Be an Auction Item

Duane and Shannon Hann have donated a one-week stay at their home in Fiji as one of the items that will be offered for the oral auction. The Hanns are heading the Auction Committee this year and are asking for donations that can be used for the oral auction, silent auction, raffle and door prizes. Because they are gone from January 1 to April 15, they request that donations be sent to them before they leave in January or after they return in April. If you have an item you would like to donate but prefer to bring it with you to the convention, please contact them and let them know what the item is, the fair market value, and the suggested opening bid. If you plan to send your donation via U.S. Postal Service, their address is P.O. Box 403, Mulino, OR 97042-1135. If you send it by UPS or FedEx, the delivery address is 28603 S Heisinger Lane, Mulino, OR 97042. They can be contacted by phone (503) 759-3710 or e-mail dshann@molalla.net.

If you are going to attend the Sanibel Shell Show in March, you can bring your donation with you and give it to Ken Matthys. He will bring it back to Oregon for you. Ken can be reached on Sanibel from November 1 – April 1. His phone number is (239) 472-2885 and e-mail address is joycematthys@aol.com.

### Program Alert

Do you have a 30-minute program you would like to present at the convention, if so contact Program Chairman John Mellott at retheresa@comcast.com or give him a call at (503) 363-5017. He hopes to complete his list of speakers before the holidays.



**See you at the COA convention in Portland (that is Mt. Hood in the background), from 1 to 5 August 2007.**

# A southern extension of *Gyroscala xenicima* (Melvill & Standen, 1903)

by

**Emilio Fabián García**

In the March 2006 issue of *American Conchologist* I published two findings of *Gyroscala xenicima* (Melvill & Standen, 1903) on the Texas coast. These findings are the most northern and western records for the species. I proposed in 2001 that *Gyroscala xenicima* was a senior synonym of *G. turnerae* (Altena, 1971).

After the Texas records were published, I received an e-mail from Mr. Juan Carlos Zaffaroni, secretary of the Sociedad Malacológica del Uruguay and an epitoniid fan. He reported that he found eight specimens of *Gyroscala xenicima* on the Uruguayan beaches of Punta del Este and La Paloma. Although Mr. Zaffaroni had originally identified his specimens as *Gyroscala turnerae*, he had also noticed its similarities with *G. xenicima*. His largest specimen measures 17mm. He states in his e-mail that friends have also found this species in Uruguay.

Mr. Zaffaroni included the accompanying image of one of his specimens. These Uruguayan findings place *Gyroscala xenicima* at a latitude slightly south of Cape Agulhas, the southernmost tip of South Africa.

In Malacolog: western Atlantic mollusk species database at the Academy of Natural Sciences, Philadelphia, Dr. Gary Rosenberg lists the southernmost record for *Gyroscala lamellosa* (Lamarck, 1822), an established circumglobal *Gyroscala*, at Latitude 20.5°S, some 10° **north** of the Uruguayan localities for *G. xenicima*.

My thanks to Mr. Zaffaroni for reporting this important geographic extension.

**References:**

**García, E. F.** 2003. *Gyroslaca turnerae* (Altena, 1971) (Gastropoda: Epitoniidae), a western Atlantic junior synonym of the Indo-Pacific *Gyroscala xenicima* (Melvill & Standen, 1903), Amer. Conch. 31(2): 21-25.

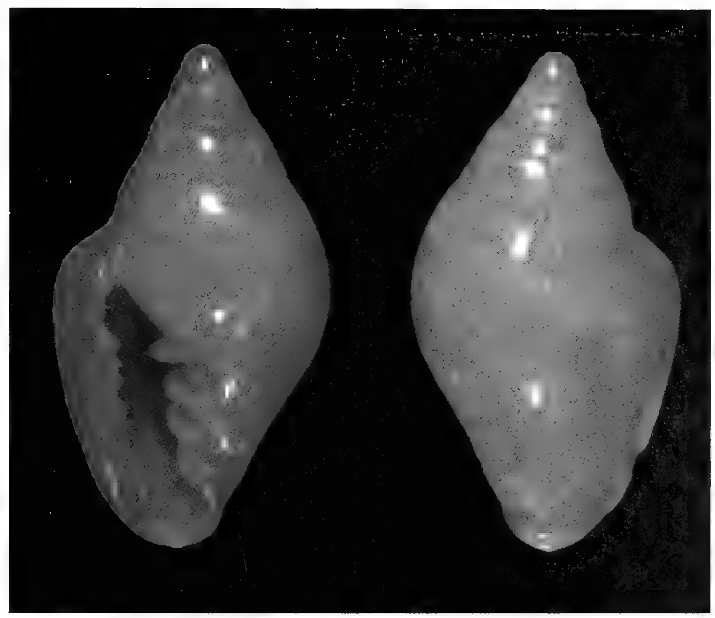
**García, E. F.** 2006. *Gyroscala xenicima* (Melvill & Standen, 1903) (Gastropoda: Epitoniidae) found in Texas, Amer. Conch. 34(1): 3.

**Rosenberg, G.** 2006. Malacolog: western Atlantic mollusk species database. URL: http://erato.acnatsci.org/wasp/findsnail.php.

# Report of a left-handed *Dentimargo eburneolus* (Conrad, 1834) (Gastropoda: Marginellidae) from Bahía de Campeche, Mexico

by

**Emilio Fabián García**



**Sinistral *Dentimargo eburneolus*, 6mm from Campeche Bay,**

While looking through sediment dredged in Campeche Bay, Mexico, I found a left-handed *Dentimargo eburneolus* (Conrad, 1834) among the micro-mollusks extracted from the dredgings. The specimen was dredged at 20°52.40'N, 92°24.83'W, in 77-81 meters, and measures 6mm.

In their 1989 report on sinistrality in the family Marginellidae, Coovert and Lee have no listing for *Dentimargo eburneolus*. This specimen may well be the first report on sinistrality for this taxon.

**Reference:**

**Coovert, G. A. and H. G. Lee.** 1989. A review of sinistrality in the family Marginellidae. Marginella Marginalia 6(1,2): 1-15.

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# Thoughts on Species & Speciation – Phenoplasticity

by Burton Vaughan and Tom Eichhorst

Mollusks are interesting to both collectors and scientists for a number of reasons, not the least of which is that speciation within many mollusk families can be remarkably extensive. We assume that there has been selection in favor of each, based on Darwinian fitness assumptions, but the picture is a bit more complex than it may at first appear. Genetics, particularly in the 1920s - 1940s, attempted to explain species change solely in terms of loss or replacement of specific genes thought to control a phenotype, whether this control involved genes operating cooperatively or singly. Darwin was, of course, unaware of genetics. Current research highlights some unanswered questions within the genetic, or neo-Darwinian, explanation for phenotype development and expression.

**Fig. 1** ***Donax serra*** **(Röding, 1798) from South Africa. These two specimens are approximately 52mm and represent two different forms or color morphs that may be habitat caused. On the left is** ***Donax serra*** **(f.** ***aurantiaca*** **Krauss, 1848) from tidal areas near fresh water (considered a subspecies by some authors). On the right is** ***Donax serra serra*** **from marine tidal areas.**

*First,* a point that Darwin himself complained about, is that observable characteristics are impermanent. Not only do these traits change, but there is no definite number of traits (morphologic or genetic) that differentiate one taxonomic species from another.

*Second,* as every developmental biologist knows, the maternal and/or external environment surrounding an embryo or neonate can have a profound effect on the adult phenotype and this effect may appear heritable.

Observations of phenotype plasticity in response to a varying environment are not new (Baldwin, 1902; Vermeij, 1969; Waddington, 1975), and neither are the related observations of phenotype switching (Minton & Gunderson, 2001; West-Eberhardt, 2003, p. 108). Darwin did say that species will change over time in response to environmental conditions. He also noted that use or disuse of body parts led to changes over time.

Over the ensuing decades, phenoplasticity has been extensively researched. The developmental emergence of a phenotype is currently believed to be based on epigenetic control mechanisms. These mechanisms explain how environmental or tissue factors silence or modify DNA (Schlicting & Pigliucci, 1998). Differences are not to be found in the DNA structure, itself, but rather in a plethora of internal and external factors: microRNAs, protein fragments, hormones, etc (Pray, 2004). A molecular model for signaling pathways has recently been worked out as well, in this case for emergence of the adult form of the nematode, *Caenorhabditis elegans* (Ambros, 2003).

Phenotype plasticity is a common feature of many species. It is found across a wide range of phyla, including vertebrate, invertebrate, plant, and algal species, and it is most frequently expressed in early developmental stages of the organism. It is a specific response of individuals, not populations, to a change in the physical and/or biological environment, and it involves some signaling pathway. What this amounts to is that a phenotype may indeed be proposed by the organism's genetic structure, but it will be determined by the interaction between an individual's genes and exogenous (tissue or environmental) factors outside the developing fertilized cell.

At the extreme, the ultimate effect of an environmental factor on an individual's genotype may be to completely change the phenotype of the individual. If the environmental factor continues to operate, the progeny of that individual will express the 'new' phenotype, but will, in fact, switch or revert to the unchanged phenotype should the environment revert (Schlicting & Pigliucci, 1998). Several specific criteria should be considered when assessing a presumptive phenoplastic response:

- The phenotype has a heritable basis, which can be transmitted to and expressed in the progeny.
- A signaling pathway is triggered externally.
- The changed phenotype is revertible to the ancestral or unchanged phenotype when external conditions revert.

A study of the South African beach clam *Donax serra* (Röding, 1798) (Fig. 1) showed phenoplasticity for shape and shell density; i.e., a heritable capability responding to particular environmental cues (Soares et al., 1998). Phenoplastic switching may also underlie the numerous color morphs of this clam species. In this case, the clam occupies a fine-grained, high-energy habitat, conditions that may favor a phenoplastic response.

One of the more interesting molluscan studies involved the snails *Physa gyrina* Say, 1821, and *P. acuta* Draparnaud, 1805

(studied as the synonym *P. heterostropha* Say, 1817). These calcium-limited freshwater snails lack sufficient calcium to simultaneously strengthen the shell by making it thicker and narrow the aperture by adding special structures like barricading teeth. The developmental dilemma is: 1) make a wide aperture and invest more in making a robust shell, thus leaving the snail vulnerable to crayfish predators; or 2) make a narrow aperture with barricades and a thinner shell, thus leaving the snail vulnerable to fish that can crush the shell. DeWitt (1995, 1998) showed that natural populations of these two snails, where crayfish were the primary predators, had a higher frequency of the narrow-aperture elongate shells; those more exposed to fish predation had the stronger, more rotund, wide-aperture shells. The clincher was when *P. gyrina* and *P. acuta* were each reared for a month in water containing either crayfish or fish, a significant fraction facultatively modified their morphology to defend selectively against the predator present. The phenoplasticity of the family Physidae has resulted in a plethora of named forms. According to Dillon et al. (2005), rather than the 40 named species that were until recently attributed to this family, there are in fact only about 10 distinct species.

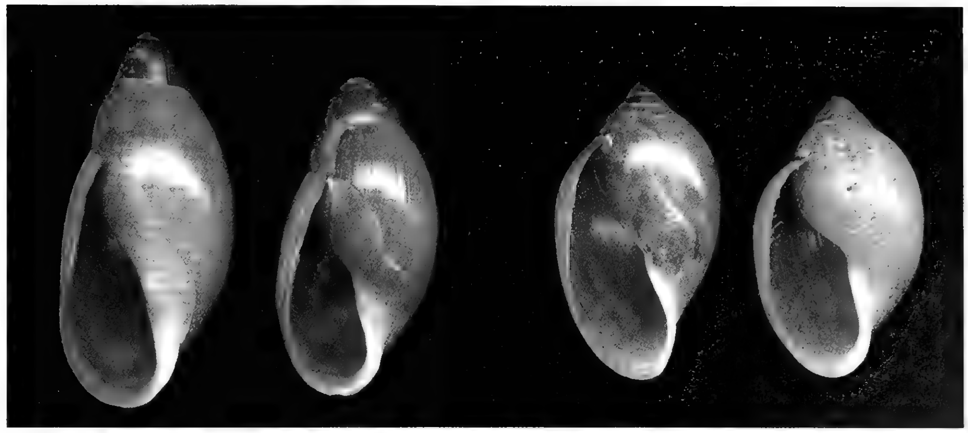

**Fig. 2 The two shells on the left are *Physa gyrina* Say, 1821 (17-20mm) and the two on the right are *Physa acuta* Draparnaud, 1805 (14-15mm). In both species the smaller shell on the right shows some thickening of the shell around the aperture. Most literature still refers to *Physa acuta* as the synonymous *Physa heterostropha* Say, 1817. These sinistral or left-handed pond snails are wide-ranging throughout much of the United States and are difficult to properly identify.**

Phenoplasticity is also common among the living species of the genus *Crepidula* and leads to high variability and much taxonomic confusion (Fig. 3). The substrate on which the snail grows affects its shell shape, leading to environmental responses that become further exaggerated owing to accommodation among correlated traits (Hoagland, 1979).

Finally there are some interesting examples of phenoplasticity in the family Neritidae. In Hawaii, the endemic *Neritona granosa* (G.B. Sowerby I, 1825) (Fig. 4) varies in shell structure between the typical pustulose surface found in specimens from downstream locations and a much smoother shell in upstream locations. This gradient between rough and smooth forms is usually correlated with altitude, with waterfalls and their associated plunge pools serving as abrupt boundaries between these ecotypes (Ford, 1987). Vermeij (1969) speculated that the rough surface broke up the lamellar flow of fast currents over the shell, helping the animal retain its grip on the substrate. Way et al. (1993) demonstrated that there was no difference to the force applied to a pustulose or a smooth shell. The fact remains, however, that the shell structure differs, most likely due to an as yet undetermined habitat cue.

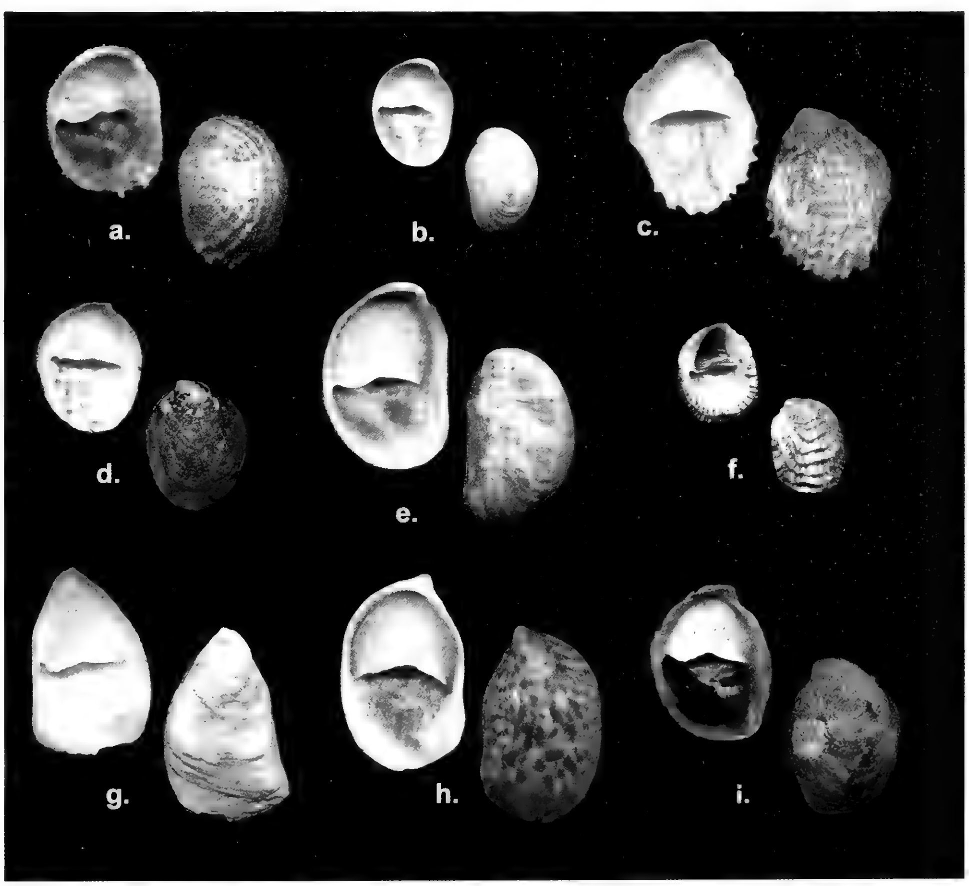


**Fig. 3 Various species of *Crepidula*, all of which vary in shape depending upon the substrate. The species illustrated vary in size from 19 to 32mm. a. *Crepidula aculeata* (Gmelin, 1791); b. *C. convexa* Say, 1822; c. *C. costata* Sowerby, 1824; d. *C. glauca* Say, 1822; e. *C. fornicata* (Linnaeus, 1758); f. *C. lessonii* Broderip, 1834; g. *C. plana* Say, 1822; h. *C. porcellana* (Linnaeus, 1758); i. *C. onyx* Sowerby, 1824. The variability of *Crepidula* species has caused and continues to cause taxonomic problems.**

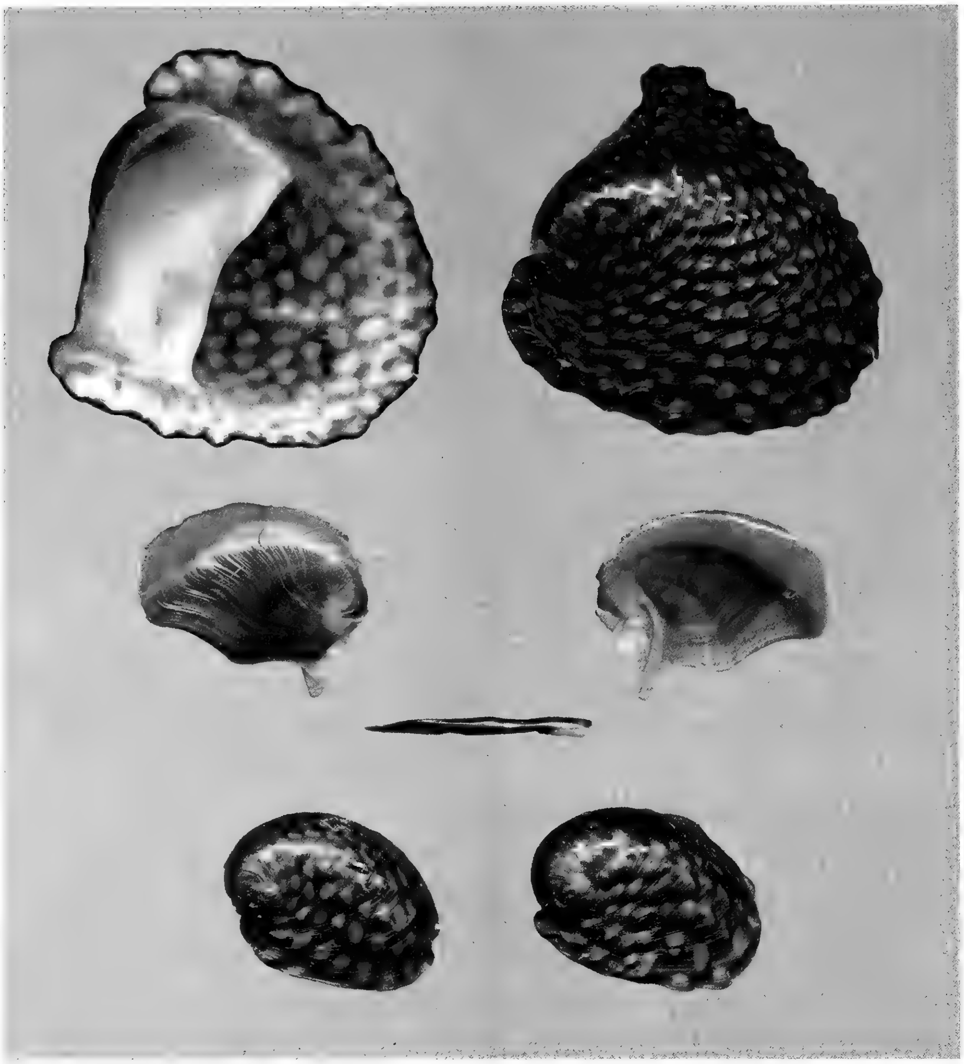

**Fig. 4 *Neritona granosa* (Sowerby, 1825) (18-35mm) from fast flowing freshwater streams in the Hawaiian Islands. The two lower specimens demonstrate the variability in shell structure. The shell on the left is from the upper reaches of the stream where the shells are typically smooth and the shell on the right is from the lower reaches where the shells have the rough surface normally associated with this species.**

The well-known zebra nerite of the Caribbean, *Puperita pupa* (Linnaeus, 1767), is found among intertidal rocks as a small white shell with black zebra-like stripes (Fig. 5). The same species found in nearby spring-fed "essentially fresh water" pools is a black shell with white spots. This freshwater form was named as a distinct species, *Puperita tristis* (Orbigny, 1842). Gunderson and Minton (1997, 2001) found what they thought were intermediate forms of *Puperita pupa* living in freshwater pools alongside the black form with white spots. They transplanted some normal *Puperita pupa* (black stripes on white) from saltwater to freshwater pools and some *P. tristis* forms (white spots on black) from freshwater into saltwater pools. The freshwater pools actually measured 8.7ppt (dissolved salts in parts per thousand) which is by formal definition actually considered brackish. The salt water pools measured approximately 37.4ppt. Three months later they observed the transplanted *P. pupa* forms had begun laying down shell that was black with white spots and the transplanted *P. tristis* forms had begun laying down normal *P. pupa* black stripes on a white shell. Both cases are a reversal of the original shell pattern and probably indicate a single species with a phenoplastic response to salinity. *

Mollusks may prove to be good candidates for further phenoplasticity studies. Both genetically inherited traits and phenoplastic response may determine an organism's morphology. Further study and some simple experimentation will help unravel and delineate these processes.

**References:**

**Ambros, Victor.** 2003. "MicroRNA pathways in flies and worms: growth, death, fat, stress and timing," *Cell* 113, pp. 673-676.

**Baldwin, J. M.** 1902. *Development and Evolution,* MacMillan, NY.

**Dewitt, T. J.** 1995. "Functional Tradeoffs and Phenotypic Plasticity in the Freshwater Snail, *Physa,"* Ph.D. dissertation, Binghampton University (SUNY).

**Dewitt, T. J.** 1998. "Costs and limits of phenotypic plasticity: tests with predator-induced morphology and life history in a freshwater snail," *J. Evolutionary Biology* 11, pp. 465-480.

**Dillon, R.T., Jr.; Wethington, A.R.; Rhett, J.M; and Smith, T.P.** 2002. "Populations of the European freshwater pulmonate *Physa acuta* are not reproductively isolated from American *Physa heterostropha* or *Physa integra, Invertebrate Biology* 121(3), pp. 226-234.

**Ford, J. I.** 1987. "Biology, microhabitat and intraspecific shell variation of *Neritina granosa* Sowerby (Prosobranchia: Neritidae) in Hawaiian streams." *Bulletin of Marine Science* 41(2), p. 635.

**Gunderson, Ross and Minton, Russell.** 1997. "Do spots equal stripes?" *American Conchologist* 25(4), pp. 22-23.

**Hoagland, K. E.** 1979. "Systematic review of fossil and recent *Crepidula* and discussion of evolution of the Calyptraeidae," *Malacologia* 16, pp. 353-420.

**Minton, Russell L. and Gunderson, Ross W.** 2001. "*Puperita tristis* (d'Orbigny, 1842) (Gastropoda: Neritidae) is an ecotype of *Puperita pupa* (Linnaeus, 1767)," *American Malacological Bul.* 16(1/2), pp. 13-20.

**Pray, Leslie A.** 2004. "Epigenetics: Genome, Meet Your Environment," *The Scientist* 18(13), July 5, 2004, pp. 14-23.

**Schlicting, Carl D. and Pigliucci, Massimo.** 1998. *Phenotypic Evolution: A Reaction Norm Perspective,* Sinauer Associates, Inc., MA.

*The research by Gunderson and Minton into the color morphs of *Puperita pupa* was first reported in *American Conchologist*, December 1997, Vol. 25 (4) and was funded by a COA grant.

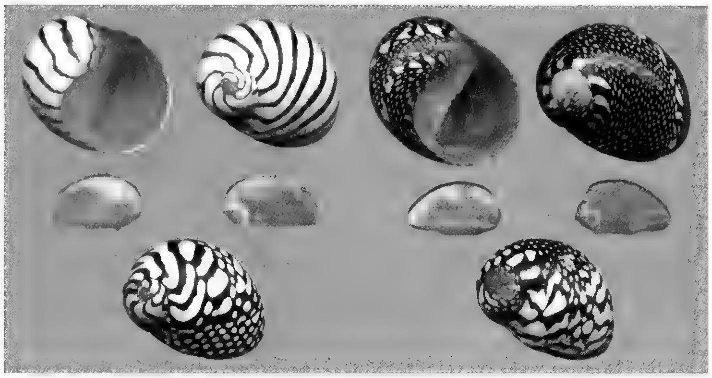

**Fig. 5 The small (7mm) Caribbean nerite *Puperita pupa* (Linnaeus, 1767) has both a marine variant (top row, left two shells) and a "freshwater" variant (top row, right two shells). If moved from one habitat to another the shell pattern changes. Bottom row left shows a change of pattern from marine to fresh water, while bottom row right shows a pattern change of fresh water to marine.**

**Soares, A., Callahan, R.K., and De Ruyck, A.M.C.** 1998. "Microevolution and phenotypic plasticity in *Donax serra* Roding (Bivalvia: Donacidae) on high energy sandy beaches," *J. Molluscan Studies* 64, Oxford University Press, pp. 407-421.
**Vermeij, Geerat J.** 1969. "Observations on the shells of some fresh-water neritid gastropods from Hawaii and Guam," *Micronesica* 5(1): 155-162.
**Waddington, C. H.** 1975. *Evolution of an Evolutionist,* Cornell University Press, p. 219.
**Way, Carl M.; Burky, Albert J.; and Lee, Michael T.** 1993. "The relationship between shell morphology and microhabitat flow in the endemic Hawaiian stream limpet (Hihiwai), *Neritina granosa* (Prosobranchia: Neritidae)." *Pacific Science* 47(3), pp. 263-275.
**West-Eberhardt, Mary Jane.** 2003. *Developmental Plasticity,* Oxford University Press, pp. 34-35.

**Genotype.** The genetic coding for properties of structure and function in an organism.

**Phenoplasticity.** The ability of an organism to alter properties of structure and function in differing environments while retaining the original genotype.

**Phenotype.** The observable properties of structure and function of an organism as determined by its genetic makeup and modified by its reaction to the environment (i.e., what an organism looks like).

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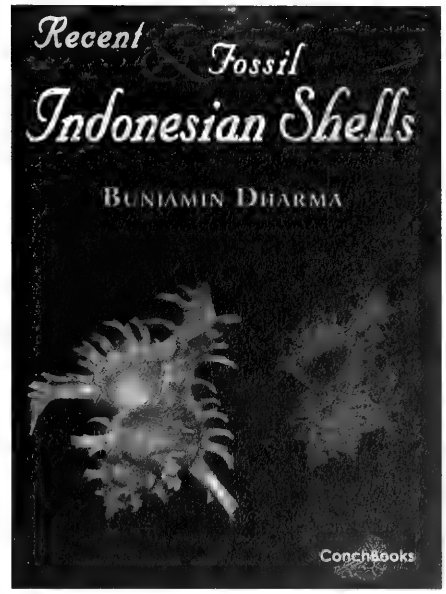
# Recent & Fossil Indonesian Shells

**By Bunjamin Dharma, 2005, 424pp.**




When I was planning my trip to Indonesia in 1999 I acquired the only 2 books available, *Indonesian Shells* Vol. I (1988) & Vol. II (1992) by the abovementioned author. Both books were in Bahasa Indonesian (the official language of the country), with only short English descriptions of the species illustrated. These books helped me classify most of the shells I found during my trip, but many species were not included in these books. Now Conchbooks have come out with this new and finely illustrated book in English.

The first section of the book deals with the geography and distribution of marine and terrestrial mollusks, with a chapter on abnormalities with colored illustrations. This is followed by the main section consisting of color plates of Recent shells, depicting some 1,440 marine species and over 500 terrestrial species. Each illustrated species is accompanied with a short description of size and the locations where they have been found. The illustrations are excellent and each plate contains a number of shells illustrating relative size among species. Regrettably the genera and species are not arranged in alphabetical order, which makes finding each species more time consuming.

During my trip I found 359 species of marine mollusks, and on checking I found that 80 of these species were not mentioned in the book. This may be partly because of different identification or a more recent or different classification, but there is no doubt that many more species are found in and around Indonesia than are covered in this book. Indonesia is surrounded by two oceans and contains thousands of islands. Even though there are shells not covered by this book, the author remarks that there are 900 species of recent shells in the book that have not been previously recorded.

The last section of the book is devoted to Indonesian fossils, and contains more than 700 fossil species illustrated in black and white. The book concludes with a systematic classification of the species presented. *Recent and Fossil Indonesian Shells* provides much needed coverage of this shell-rich area between the species of the Philippines to the north and those found in the Australian region to the south. I highly recommend this book.

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# Landsnails of Claiborne Bluff

By
Harry G. Lee
photos by Bill Frank

On the morning of May 30, 2006 I found myself among a score and a half of intrepid COA conventioneers intent on collecting Eocene shell remains at one of the most provident and historically important collecting sites in all of North America. The bluff along the left bank of the Alabama River, just NW of modern-day Claiborne, is two hours by bus NbyE of Mobile. It is the site of a once important port and is near the 1830s home of Judge Charles Tait. Late in the preceding decade fossil shells collected by Judge Tait reached Philadelphia and sparked a revolution in American paleontology. Two Quaker conchologists in particular, Isaac Lea and Timothy Abbott Conrad, took a strong interest in the study of this extinct fauna, which was hitherto unknown to science. Conrad left Philadelphia in 1832 by ship and traveled overland from North and South Carolina through Georgia and into Alabama. He spent most of 1833 in Claiborne under the sponsorship of Lea and as the guest of Judge Tait Claiborne (Wheeler, 1935). Tait's discovery and Conrad's monumental efforts in the field helped usher in a new era in invertebrate paleontology in America, and formed the basis for one of the most abiding and acrimonious controversies in history of conchology. Fellow Quakers Conrad and Lea fell into an adversarial relationship, particularly over the Claiborne fossils (later involving naiads and other conchological campaigns), that lasted until Conrad's death in 1877, but that's another story.

Back to the future! Under the leadership of Drs. Andy Rindsberg and David Campbell of Tuscaloosa, AL, our day in the field was marked by a tough, steep downhill hike, temperatures in the high nineties, and plenty of Eocene remains.

Unlike most of the soil and landscape in this part of the state, the exposure of these seashell remains by the erosion of Claiborne Bluff has produced a utopian habitat for living landsnails. They prosper under the dense forest canopy while recycling the calcium carbonate resource, sequestered for 45,000,000 years, to help build their shells. Accordingly, to supplement the day's shelling experience and because keeping up with the vanguard of the expedition was telling on my stamina, I lagged and started noodling the leaf litter, some of which I stuffed into a two gallon zip-loc bag for later examination. Weeks later, with minimal annotations, my landsnail log for the day was written:

USA, ALABAMA, Monroe Co., 3 km. NW Claiborne. Wooded 70 m. bluff, from just SE U.S. 84 bridge to ca. 10 m. above left bank Alabama R. Collected by visual surveillance and leaf litter examination. H. Lee! 30 May, 2006.

*Oligyra orbiculata* Say, 1818 Globular Drop
    ***Pomatiopsis lapidaria* (Say, 1817) Slender Walker** *
*Carychium mexicanum* Pilsbry, 1891 Southern Thorn; large series, to 1.9 mm, axial striae easily seen
*Gastrocopta contracta* (Say, 1822) Bottleneck Snaggletooth
***Gastrocopta pentodon* (Say, 1821) Comb Snaggletooth**
*Pupoides albilabris* (C.B. Adams, 1841) White-lip Dagger
***Pupisoma mcneilli* (Clapp, 1918) Gulf Babybody**
*Vertigo milium* (Gould, 1840) Blade Vertigo
***Vertigo oscariana* Sterki, 1890 Capital Vertigo**
*Strobilops aenea* Pilsbry, 1926 Bronze Pinecone
*Helicodiscus inermis* of authors, prob. not (H. B. Baker, 1929)
***Punctum minutissimum* (Lea, 1841) Small Spot**
    ***Glyphyalinia lewisiana* (G. Clapp, 1908) Pale Glyph**; may belong in *Nesovitrea* Cooke, 1921*
    ***Glyphyalinia luticola* Hubricht, 1966 Glass Spot**
*Glyphyalinia solida* H. B. Baker, 1930 Imperforate Glyph
***Hawaiia minuscula* (A. Binney, 1840) Minute Gem**
    *Mesomphix capnodes* (W. G. Binney, 1857) Dusky Button *
*Mesomphix globosus* (MacMillan, 1940) Globose Button
    ***Paravitrea conecuhensis* (G. Clapp, 1917)Triangular Supercoil**
*Zonitoides arboreus* (Say, 1817) Quick Gloss
*Euconulus chersinus* (Say, 1821) Wild Hive
***Guppya sterkii* (Dall, 1888) Sterki's Granule**
    *Inflectarius inflectus* (Say, 1821) Shagreen
    *Patera perigrapta* (Pilsbry, 1894) Engraved Bladetooth
    *Stenotrema spinosum* (I. Lea, 1830) Carinate Slitmouth [TOPOTYPES; original specimens collected by Judge Tait] *
    *Stenotrema stenotrema* (Pfeiffer, 1842) Inland Slitmouth *

Total 26 species; all native.

- **Boldface**: new county record (CR) vs. Hubricht, 1988 (9).
- Indented: not among the 71 native species of landsnails found by HGL in northeast FL (NEFL) (9); both CR and non-NEFL (4).
- *not among the 65 species collected by Wayne Sullivan in Mobile and Baldwin Cos., coastal AL 1975-1979 (Lee, 1979) (5; none NEFL).

The findings are remarkable for (1) a rich species composition, (2) a great number of individual shells (over 100 *Carychium* alone), (3) the significant contrast with Jacksonville, FL fauna, (4) the number of new county records considering all the collecting that went on in this neighborhood, and (5) the finding of five large species that do not seem to occur in the well-studied coastal counties. The latter is probably the most unexpected aspect of the analysis. Four of the these species have distinct affinities with the Piedmont and may have colonized this Coastal Plain area through the agency of the Alabama River, which lapped at the foot of the bluff for millions of years. It was the river, its rapids just upstream, and the bluff situated at the limit of commercial navigation, that accounted for the early economic importance of this bit of landscape, attracting early settlers like Charles Tait. The bluff at Claiborne is thus a monument to the fauna of an ancient sea, the economic history of Alabama, and the ecology and zoogeography of landsnails - all wrought by geologic processes beginning a little after the first horse roamed the earth.

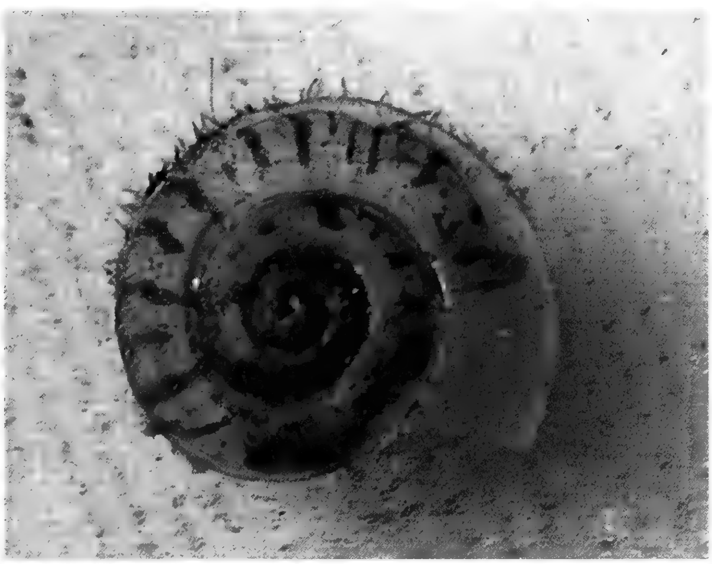
**References:**

**Hubricht, L.** 1985. The distributions of the native land mollusks of the Eastern United States, *Fieldiana* 24(1359): pp. 1-191 + viii, June 28.

**Lee, H.G.** 1979. A Tale of two cities, *Shell-O-Gram 20*(6): 5-7, June. See also: **http://www.jaxshells.org/lee.htm**.

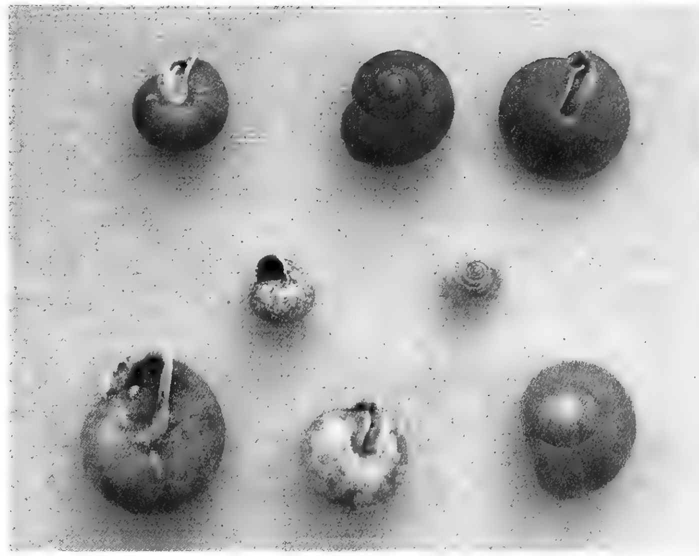
**Turgeon, D. D., J. F. Quinn, Jr., A. E. Bogan, E. V. Coan, F. G. Hochberg, W. G. Lyons, P. M. Mikkelsen, R. J. Neves, C. F. E. Roper, G. Rosenberg, B. Roth, A. Scheltema, F. G. Thompson, M. Vecchione,** and **J. D. Williams.** 1998. Common and scientific names of aquatic invertebrates from the United States and Canada: mollusks, 2nd edition, *American Fisheries Society, Special Publication 26*, Bethesda, Maryland, ix, pp. 1-509, 16 pls. (unpaginated).

**Wheeler, H. E.** 1935. Timothy Abbott Conrad, with particular reference to his work in Alabama one hundred years ago. *Bull. Amer. Paleont.* 23: pp. 1-157, i-x, portrait (Paleontological Research Institution, Ithaca, NY reprint, 1977).



**Juvenile *Stenotrema spinosum* showing peripheral periostracal hairs, which inspired the specific epithet.**

**Two adult *Mesomphix capnodes* (about 40mm).**



**L to R: (first row): *Inflectarius inflectus, Mesomphix globosus, Stenotrema spinosum*; (second row): *Oligyra orbiculata, Glyphyalinia solida*; (third row): *Patera perigrapta, Stenotrema stenotrema, Mesomphix capnodes*. Largest shell a little under 25mm.**

**Frontal view of a 20mm adult *Stenotrema spinosum* topotype.**

**A sample of the micros sorted from the dried and sifted litter sample (quarter for scale).**

# *HAPLOTREMA* AND *ARIOLIMAX* AS DEPICTED BY TLINGIT ARTISTS

By
Ned E. Fahy

Scattered along the fjord-indented mainland and wooded islands of Southeast Alaska from Dixon Entrance north to Mount St. Elias are the native villages of the Tlingit people. The country is rugged and most of the islands are mountainous (Fig. 1).

The Tlingit (pronounced "KLING git") are of special interest to malacologists because they have a tribal subdivision called Snail or Slug House. (The Tlingits use the same word for snail and slug.) Since I am a snail person, I decided to become acquainted with my "heritage." I was also able to obtain works by Tlingit artists depicting *Haplotrema* and *Ariolimax* in several media.

**Snail House**

There are three Tlingit regions with a Snail House. All three belong to the Raven totemic group. The houses belong to the Hoonah Tribe on Chichagof Island, the Kate Tribe on Kupreanof Island, and the Wrangell Tribe on Wrangell Island. When I asked why the name Snail House had been chosen, I was told that there is a language similarity between the word for snail and the word for the boards used to create the different levels of a traditional clan house. The various layers resemble the designs on a snail's shell.

I also learned that Tlingit stories attribute the name Snail House to the behavior of snails and slugs at an old clan house used only for ceremonial occasions. When the fires in the clan house were lit and it warmed up, the snails and slugs would come out from between the boards, either responding to the heat or seeking refuge from the smoke. The snails were described as about a half-inch in diameter and usually found away from salt water. The half-inch snails were probably either *Haplotrema vancouverense* (Lea, 1839) (Fig. 2) or *Vespericola columbianus* (Lea, 1839) (Fig. 3).

The late Louis Minard, a silversmith at Sitka, told another story: "When the people came out of their houses, there were many slugs on the steps. They gathered up the slugs and returned them to the forest. The next morning they reappeared, and so the clan was known as Slug House."

**Tlingit Weaving Techniques**

There are two Tlingit weaving types, Raven's Tail and Chilkat. The simpler plainer black-and-white Raven's Tail weaving (Fig. 4) predates the elaborate yellow-and-black Chilkat robes (Fig. 5). Raven's Tail weavings have rectangular designs traditionally made of mountain goat wool and hair. The designs are typically in black and heavily tasseled against the naturally white background. Touches of yellow in horizontal bands are sometimes added.

The most eye-catching robes of the Northwest tribes were formerly made exclusively by the Chilkat Tribe. In contrast to Raven's Tail weaving, the five-sided Chilkat Dancing Robes are decorated with black, yellow, white, and blue curvilinear designs in the totemic style (Fig. 6) Chilkat weavers use wool and hair, but also incorporate cedar bark into the basic weaving strands. I commissioned two mollusk weavings, one in each style.

**Snail Weaving in Raven's Tail Style**

While spending a day in Sitka in 2003, I visited the Sitka National Historical Park. In the museum, I met Teri Rofkar (Fig. 7), a Tlingit weaver of the Snail House clan. Teri is an accomplished weaver. She did her training with the "dean" of Tlingit weaving, Cheryl Samuel, a non-Tlingit who started the revival of native weaving in Alaska.

Teri created the first Raven's Tail robe woven by a Tlingit in more than 200 years. It is now on display at Sitka National Historical Park. She also has weavings in the permanent collection of the Smithsonian Institution's National Museum of the American Indian in Washington D.C. and a large Raven's Tail weaving depicting the 1964 Alaska Earthquake in the lobby of the Anchorage Airport.

After I told Teri of my malacological interest in Snail House, I asked if she would weave a snail wall hanging for me. Her first reply was, "Let me think about it. I've never had that request before."

To honor my request Teri created a snail Raven's Tail wall hanging (Fig. 8). The center design is a modification of the very old box-like patterns used on Raven's Tail robes. It resembles a square *Haplotrema vancouverense* except that it coils to the left. When I asked Teri why the snail was sinistral, she said the snail was left-handed because she is left handed and weaving is easier for her when moving from left to right. I guess that's a good reason.

Teri used Merino sheep wool because mountain goat wool is difficult to obtain. The yellow dye is made from wolf lichen. The brown color of the snail's tentacles comes from hemlock bark. Teri didn't know that the snails have two sets of tentacles, but she did add a slime trail for realism (Fig. 9).

The weaving is 14 inches wide and 11 high. The long tassels which hang from the design field are one of the characteristics of Raven's Tail weaving. The fur at the top is sea otter (legally collected). Weavings are usually left unsigned, but on the right side of this hanging is a long red thread representing Teri Rofkar's signature (Fig. 10). Rofkar, her husband's name, means "red spear" in Danish.

**Slugs in Silver and Gold**

When I picked up my snail weaving, I also met the late Tlingit silversmith Louis Minard (1917-2004) (Fig. 11). He was making Teri a gold bracelet (Fig. 12) with a slug design based on the traditional Tlingit representation of *Ariolimax columbianus* (Gould in A. Binney, 1851) (Fig. 13). He had previously made her a silver one with a Raven, her totem, and slug design (Fig. 14).

Fig. 1 Most of the islands are mountainous and wooded.

Fig. 2 *Haplotrema vancouverense* (Lea, 1839).

Fig. 3 *Vespericola columbianus* (Lea, 1839).

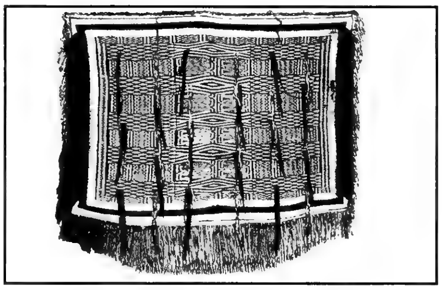


Fig. 4 An example of a classic Raven's Tail weaving.

Fig. 5 An example of Chilkat five-sided weaving.

Fig. 6 Chilkat Dancing Robe (right with fringe) and black and red botton blankets.

Fig. 7 Teri preparing cedar bark.

Fig. 8 Teri's snail weaving has a 5 by 5.5 inch design on an overall weaving of 13 by 11 inches.

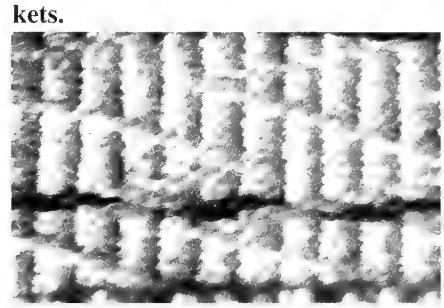


Fig. 9 The zigzag slime trail on Teri's snail weaving.

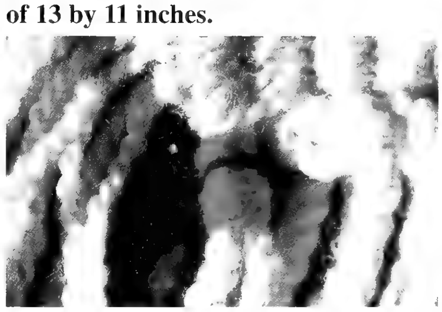


Fig. 10 Teri's woven signature, "red spear."

Fig. 11 Louis Minard (Tlingit silversmith) in 2003.

Fig. 12 Louis's partly completed gold slug bracelet for Teri.

Fig. 13 A four-inch *Ariolimax columbianus* (Gould in Binney, 1851).

Fig. 14 Teri's silver slug bracelet with the raven totem.

**Slug Weaving in Chilkat Style**

After Teri completed the snail weaving, I asked her if she would make me a slug wall hanging. When she said she couldn't do it, I thought maybe there was a taboo, but she went on to say that the curved lines needed to create the slug would require the Chilkat weaving technique. Raven's Tail makes only straight lines. Teri does not do Chilkat, but her sister, Shelly Laws in Anchorage, does (Fig. 15).

Shelly has been doing Chilkat weaving for many years. She and Teri both got interested in wool weaving at about the same time. By then, Teri was also on the road to becoming a master basket weaver.

Shelly had done some other weavings including a beautiful Chilkat robe. She says, "I enjoy using the robe to tell stories in the schools here. I think it is good for people to see this form of art in more places than just behind glass. There is nothing more fun than having a first-grader tell you, 'That sure is a nice rug you're wearing.'"

Shelly thought it would be fun to make a slug wall hanging, but she would need some time to sketch it. In January 2005, I received an e-mail with her sketch that was very close to Louis's bracelet design. The weaving would take 6 to 9 months depending on her time schedule.

When I met Shelly in Sitka in June, 2005, she had completed the upper body but not the mouth and the area below it. What she had completed looked great. As I watched Shelly weave, she demonstrated the great skill required for the task (Fig. 16). The warps (vertical strands) hang loose on a frame and there is no shuttle. The weave is two-strand finger twining very much like the Tlingit spruce root basket weave.

The materials Shelly used for the warp were merino wool and cedar bark. Her sister, Teri, obtained the bark from a neighbor who had to remove a hazardous cedar tree from his property. She dried the bark and then pounded it with a rock against a piece of bone (Fig. 17). The pounding breaks down the fibers and makes it easier to use. You can see some of the wool-and-bark warps in the bottom fringe. Shelly used commercial dyes because she said natural dyes tend to fade; however, the black is the natural color of New Zealand Merino sheep wool.

The slug pattern, as is commonly depicted in Chilkat weaving, is presented in mirror images with a space between. My slug weaving is 27.5 by 9 inches and is shaped like a ceremonial waist robe. Shelly did not include ceremonial ties or backing because it was not to be used as a piece of regalia. She didn't think I would be dancing in it.

As a snail person, I was very pleased with the slug weaving (Fig. 18). The two heads have character (Fig. 19), although Shelly has taken artistic license with slug anatomy. The weaving contains her signature on each side (Fig. 20).

**Slug Mask**

On a later visit to Sitka in 2005, I asked Tommy Joseph (Fig. 21), the wood carver at the Sitka National Historic Park, to make me a slug mask. Tommy is not from Snail House, but from Box House. He carved his first piece, a halibut hook, when he was eight years old. He now has many totem poles and other pieces of carvings on display at the Park and other locations. Tommy made Teri a slug comb, but I thought a mask was more appropriate for a bald guy like me.

The mask, carved in alder, is 13 inches tall and 9.5 inches wide (Fig. 22). It lacks eyeholes because Tommy figured I wouldn't be wearing it in a ceremony. He chose traditional colors but used acrylic paint.

Following Tlingit tradition, Tommy used human faces at "action places," used as blowholes or body joints in other animals. Of the slug's two sets of tentacles, the upper pair (Fig. 23), bearing the eyes, have faces (Fig. 24), while the lower pair, for sensing and touching, have toes on the underside (Fig. 25). The pneumostome, or breathing hole, is present on the right side and is represented by a face (see the back cover).

Not all Tlingit carving is meant for ceremonial or ritual use, some is just for fun. Sitka National Park Service Ranger John Hallum leads the "slug walks," where he discusses local natural history, to include the large and showy *Ariolimax* slugs. He owns a slug carving complete with a ranger hat (Fig. 26).

I learned a great deal from these wonderful and talented artists. Some of this had to do with old traditions, but I believe the main lesson was the need to keep old traditions, arts, and skills alive. We can each be enriched by the efforts of Tlingit artisans: dancers, smiths, weavers, and carvers.

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## In Memoriam

**Mattie Chanley**

**Norman Gardner**

**Ethel M. Gettleman**

**Robert M. (Bob) Linsley**

**Paul W. Parmalee**

**Brian Smith**

**Alta Van Landingham**

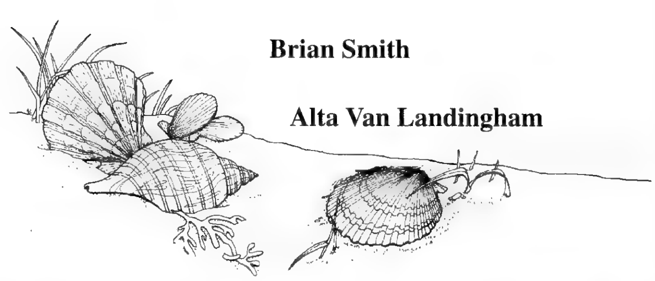

Fig. 15 Shelly (left) and Teri (right) at Shitka (2005).

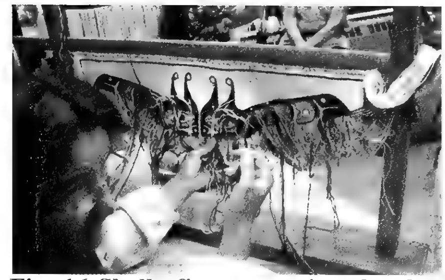

Fig. 16 Shelly finger-weaving the slug design in a maze of threads.

Fig. 17 Teri pounding the cedar bark.

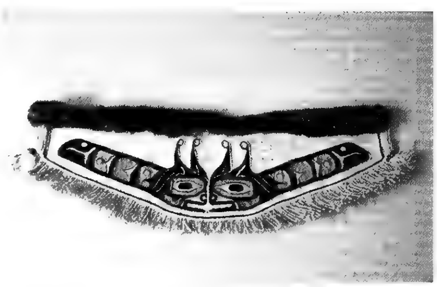

Fig. 18 The completed slug weaving.

Fig. 19 The mirror image heads.

Fig. 20 Shelley's signature.

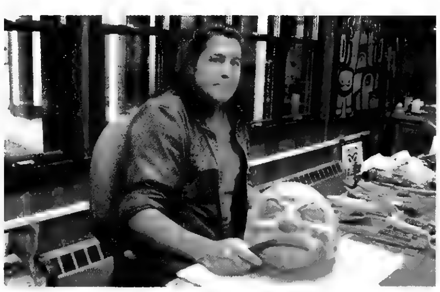

Fig. 21 Tommy Joeseph working on a mask.

Fig. 22 The completed Ariolimax mask (see also back cover).

Fig. 23 The tentacles have faces and the eyebrows have vegetation to conceal the slug.

Fig. 24 The ends of the tentacles are "action places."

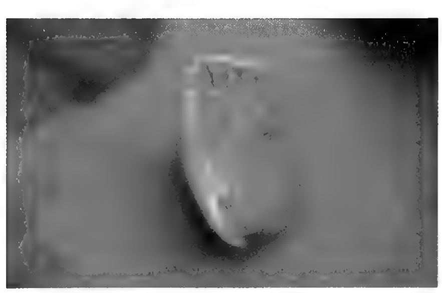

Fig. 25 Toes on the bottom of the lower tentacle.

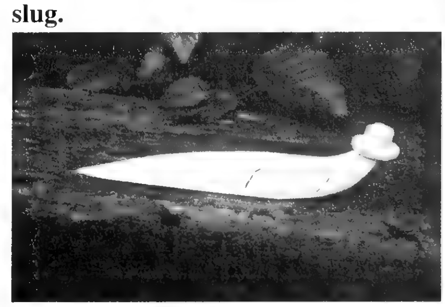

Fig. 26 The Sitka National Historic Park *Ariolimax* with a ranger hat.

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# American CONCHOLOGIST



Quarterly Journal of the Conchologists of America

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 34, No. 4 December 2006**


In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***


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**Front cover:** *Talparia talpa* (Linnaeus, 1758), the mole cowry, 77mm, collected under rocks in 25 feet of water, eastern Samar Island, the Philippines. The dark color morph shown here is similar in appearance to the less common *Talparia exusta* (Sowerby, 1832), the burnt cowry, from the Red Sea. *T. talpa* is a handsome shell popular with collectors, many of whom have not seen the living animal. It is found throughout the Indo-Pacific. Image by Tom Eichhorst.

**Back cover:** Living *Talparia talpa* with its spectacular mantle covering most of the shell. This animal was photographed at night on a coral "bommie" in 35 feet of water, just off of Negros Island, the Philippines in 2006. Photograph courtesy of Charles Rawlings.

## Notes from the Editor

## ERRATA

The front cover image of the *Charonia tritonis* (Linnaeus, 1758) in the September issue was credited to Chris Takahashi of Hawaii, but was actually a photograph taken by his friend Scott Johnson.

The *Nannodiella oxia* (Bush, 1885) shown in "New Records for Florida" by David Kirsh on page 19, fig. 28, in the September 2006 issue was actually found as beach drift in North Carolina and is in fact found in Turgeon, D. *et al.*, 1998. It was inadvertently included with the Florida shells.

The "Notes from the Editor" in the September issue described the process of getting American Conchologist published and listed some of the people involved. A glaring omission was my failure to mention Betty Lipe, the Advertising Director. She has the task of contacting each advertiser as their individual contract runs out and must make sure that I publish the correct ads in the preferred format. Prior to each issue layout, Betty sends me a list with current ads and the required layout for each. Thank you Betty!

*Tom Eichhorst*

## Additional Notes on Kaiawase by Richard E. Petit



In the September issue of *American Conchologist* there is an interesting, as usual, article by Peter Dance on the Japanese Shell-matching Game (Kaiawase). This game was touched on briefly, and a reference given to illustrations of the elaborate containers for the shells, in these pages (Petit, 2004: 26). It may be of interest to some to know that at least one example of these "game pieces" resides in a museum type collection.

In 1798 P.F. Röding named the species *Venus lusoria* (= *Meretrix lusoria* (Röding, 1790)) based on a figure in Chemnitz (1782, pl. 32, fig. 340). W. O. Cernohorsky located a specimen from the Chemnitz collection in the University Zoological Museum, Copenhagen. One valve of that specimen, a syntype, contains a painting of a garden scene showing three people seated by a pond. It was figured by Cernohorsky (1974, fig. 67). Although the interior of only one valve is shown, both are said to be painted with identical scenes. Chemnitz (1782: 337-340) devoted much of his discussion of this species to its use as game pieces in China and Japan.


**Cernohorsky, W.O.** 1974. Type specimens of Mollusca in the University Zoological Museum, Copenhagen. Records of the Auckland Museum, 11: 143-192.

**Chemnitz, J.H.** 1782. Neues systematisches Conchylien-Cabinet. Vol. 6. Raspe, Nürnberg.

**Petit, R.E.** 2004. Two (or three or four) little known popular shell books by the late Dr. Tadashige Habe. American Conchologist, 32(4): 25-27.

# BLOODSUCKING PYRAMIDELLIDS

By
Robert Robertson
(Photographs by the author)

Pyramidellids are an enormous family of mainly small gastropods whose systematics is based almost exclusively on shell characters. The resultant chaos is notorious and in many cases identifications are unreliable or impossible. In the long run, more knowledge of the living animals would surely further systematics. Serious amateurs could make helpful contributions.

Interestingly and unusually, the family appears to be externally parasitic on other invertebrates. They are definitely known to feed on other gastropods, bivalves, a chiton, polychaetes (annelid worms), a sipunculid, and an enteropneust (acorn worm). Observations are still much needed on the host-parasite relationships and degrees of host specificity, backed up by microscope confirmations of actual feeding. Mere associations with other animals in the field can be misleading. No pyramidellids are known to parasitize echinoderms. These are the exclusive hosts of eulimids, an unrelated major group of gastropod parasites, including some that are worm-like and shell-less as postlarvae.

The pyramidellid mouth is at the end of a fully everted "proboscis" that can be up to about twice the shell length, or even longer in some young postlarvae. It turns inside out like a sock and can be withdrawn into the head through the nerve ring. A piercing stylet inside a sheath can project through the mouth, which is surrounded by a sucker for temporary attachment to the host's skin. The stylet, which may or may not be a remnant of a radula or jaw, pierces the host's skin. The stylet is hollow and the combined salivary ducts enter its base. Thus saliva is injected into the host. Blood from the host does not enter through the stylet; it enters through the separate oral tube leading from the mouth. Blood flows from the host into the parasite's oral tube and esophagus with the aid of one or two buccal pumps. The pumping action can easily be seen with a low-power dissecting microscope. The pyramidellid diet is exclusively liquid, consisting of the blood plasma and the floating blood cells.

The observations and photographs presented here were made on the most common low intertidal to shallow subtidal white-shelled species of "Odostomia" (a grouping within Pyramidellidae once considered a genus and at other times a subfamily) ranging from New England to Texas. I did most of the detailed work while I was Guest Investigator at the Woods Hole Oceanographic Institution, Massachusetts, but I also saw or had sent to me living animals from North and South Carolina, Georgia, northwest Florida, and Texas.

There are 255 currently recognized pyramidellid species living in the Western Atlantic (Rosenburg, 2005). These are placed in 36 genera. There is a staggering total of 135 species of *Turbonilla* Risso, 1826. The five species on which this study is based are provisionally placed in the odostomian genera *Boonea* Robertson, 1978, and *Fargoa* Bartsch, 1955. There are many possible senior synonyms for these (listed in Schander et al., 1999), but to date these remain biologically unknown. I named *Boonea* for the renowned amateur Texan collector Constance Boone. *Boonea seminuda* (C. B. Adams, 1839) ranges from eastern Canada to at least Mexico, and has a reticulately-noded shell. *B. bisuturalis* (Say, 1822) ranges from eastern Canada to New York and Maryland, where it is replaced by, or intergrades with, *B. impressa* (Say, 1822) that also extends at least to Mexico. Both have spiral shell sculpture: *B. bisuturalis* has a variable number of incised spiral lines or is smooth, while *B. impressa* is spirally corded. *B. bisuturalis*, found at Woods Hole, has planktotrophic (plankton feeding) larvae, as does *B. impressa* found from North Carolina to northwest Florida.

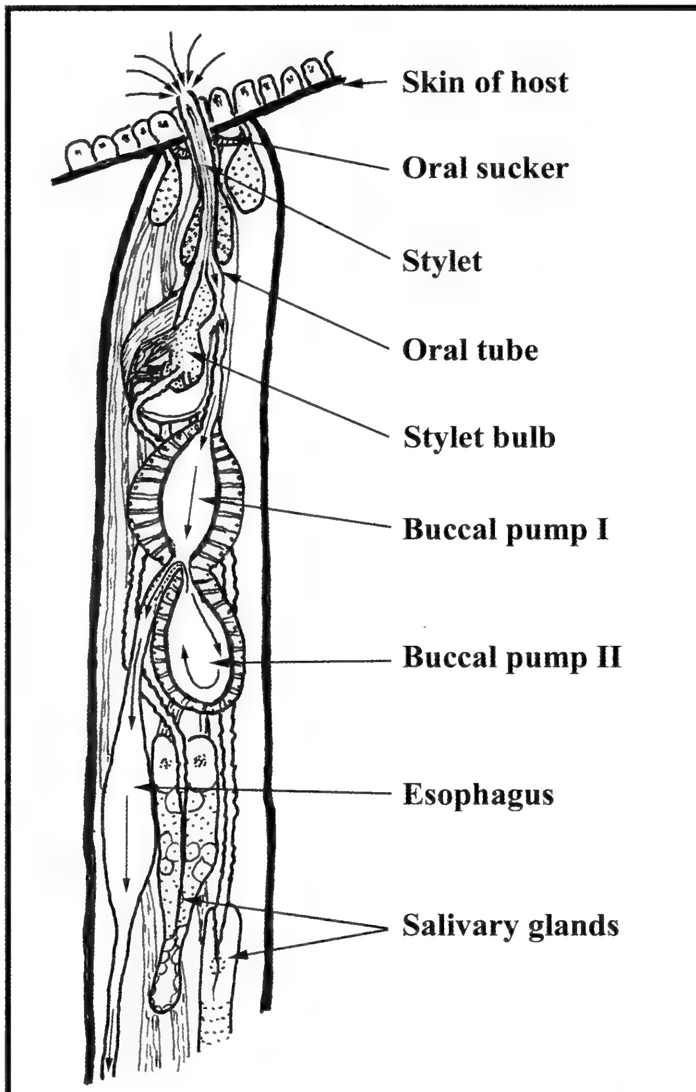


**Fig. A. Diagrammatic longitudinal section of an everted odostomian "proboscis" sucking on a host. Arrows show flow of food (blood). Adapted from Ankel (1949).**

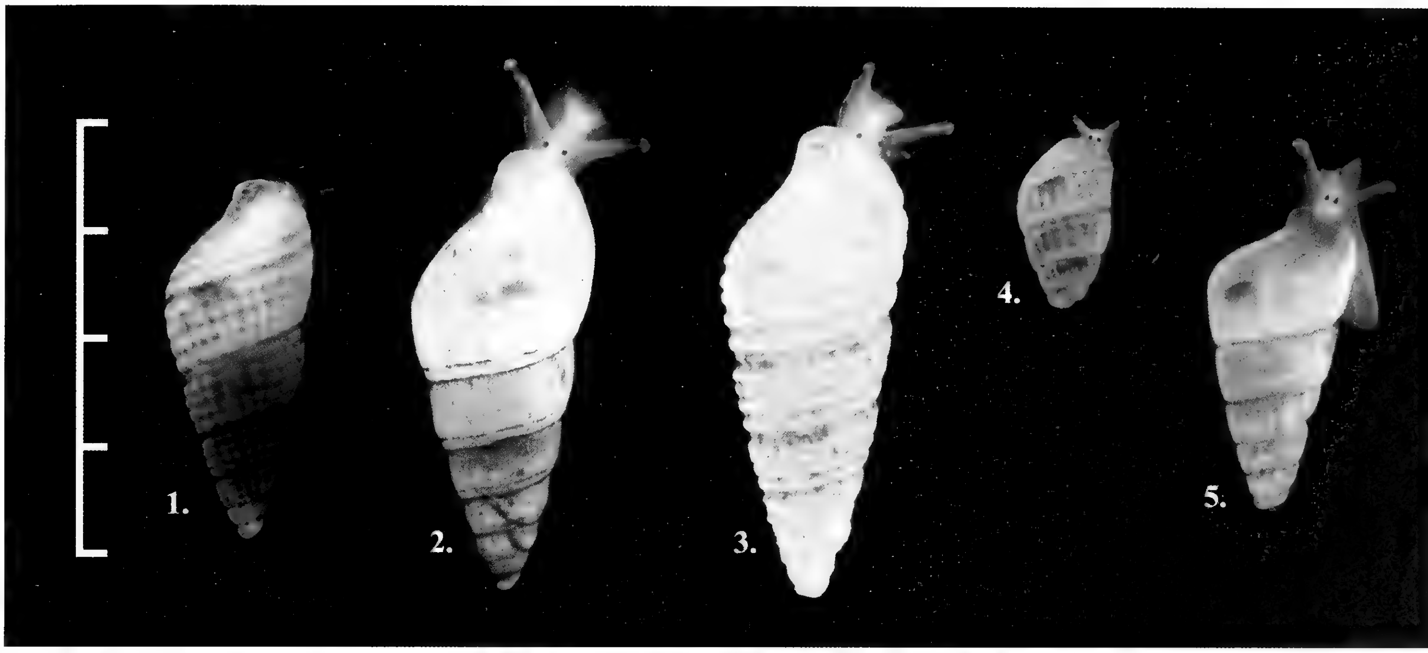


**Fig. B. The five species of pyrams in this study: 1. *Boonea seminuda* (C.B. Adams, 1839); 2. *Boonea bisuturalis* (Say, 1822); 3. *Boonea impressa* (Say, 1822); *Fargoa dianthophila* (Wells & Wells, 1961); and *Fargoa bartschi* (Winkley, 1909). All specimens are living (scale in mm).**

The *Boonea* species from Texas, however, has much larger eggs and a short or non-planktotrophic, non-feeding larval stage. The shells of adult specimens from Texas (considered to be *B. impressa*) are slightly different from those of adult specimens from North Carolina. These larval and adult differences mean the Texas species is quite possibly an undescribed species, or it could be an ecological form. Different modes of gastropod larval development are usually reflected in different protoconch morphologies, but that is not so in this case.

Two species of *Fargoa* range from New England to Texas and are not readily distinguishable from *Boonea*. *Fargoa dianthophila* (Wells & Wells, 1961) has a noded shell somewhat like a miniature *B. seminuda*. *Fargoa bartschi* (Winkley, 1909) is smooth-shelled and resembles a young *B. bisuturalis* without incised spiral lines. Animal characters are better than adult shell characters to distinguish *Fargoa* from *Boonea*.

Some pyramidellids are host-specific, always occurring on the same host species. *Boonea* parasitizes a wide array of other mollusks, while *Fargoa* is only known to parasitize polychaetes (tube worms) in the family Serpulidae, genera *Eupomatus* and *Hydroides*. This host phylum difference is generic in character. The most common host of *B. seminuda* at Woods Hole is the slipper limpet, *Crepidula fornicata* (Linnaeus, 1758); in North Carolina its hosts are the scallops *Argopecten irradians* (Lamarck, 1819) and *A. gibbus* (Linnaeus, 1758), as well as *C. fornicata*. The most common host of *B. bisuturalis* at Woods Hole is the periwinkle *Littorina littorea* (Linnaeus, 1758), an introduced species known from that area only since 1875. This in itself suggests that the original natural host was a different species. The most common host of *B. impressa* (*sensu lato*) at North and South Carolina, Georgia, and in the Gulf of Mexico, is the oyster *Crassostrea virginica* (Gmelin, 1791). At these places *B. impressa* is a pest, interrupting feeding by causing frequent shell valve closures, distorting marginal shell growth, depleting the hosts of blood, and transmitting a parasitic protozoan disease (*Perkinsus marinus*) from one individual oyster to another. All of these are factors in slow growth and reproduction of the host. *Boonea* species have natural host preferences, but these can change from place to place or in the course of a parasite's lifetime. When starved in the lab, *Boonea* will feed on almost any other bivalve or gastropod offered. I saw *B. seminuda* feed on 22 different species out of 36 proffered, *B. bisuturalis* on 37 out of 45, and *B. impressa* on 36 out of 37. Crowding on one host such as illustrated by Abbott (1972: 45) was altogether abnormal and would not occur naturally. Starved Texan *B. impressa* frequently feeds cannibalistically. *B. bisuturalis* was once seen to feed on *Fargoa bartschi*. A temporary host can be smaller than its parasitizing *Boonea*.

The two species of *Fargoa* co-occur on *Eupomatus dianthus* (Verrill, 1873) in Massachusetts and North Carolina, sometimes on the same individual worm. *F. dianthophila* is small enough sometimes to ride, sitting on the operculum, in and out of the tube as the worm extends and withdraws. Being longer, *F. bartschi* stays outside the tube. In the lab, *F. dianthophila* fed readily on both the worm's mantle collar and branchiae (gills). *F. bartschi* was only once seen to feed on a mantle. *F. dianthophila* also occurs on two other species of *Eupomatus* off North Carolina and northeast and northwest Florida and on one species of *Hydroides* off northwest Florida. *Eupomatus dianthus* also occurs in northwest Florida where it serves as host to *F. dianthophila*.

Although some of the species are similar in adult shell morphology, the two genera differ in major host choice as well as in sperm-bearing structures (spermatophores). The protoconchs of *Boonea* species are hyperstrophic (left-handed) and strongly tilted, while those of *Fargoa* species lack the strong tilting. The difference in larval ecology (except in the Texan *B. impressa*) is another generic character.

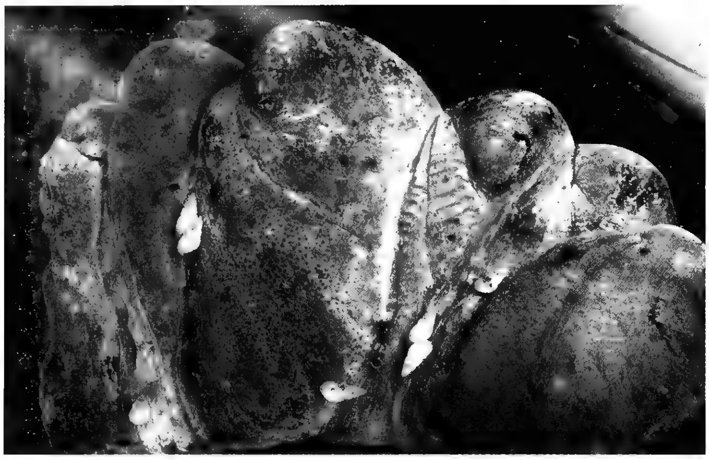

Fig. C. *Boonea seminuda* clustered on a chain of *Crepidula fornicata*.

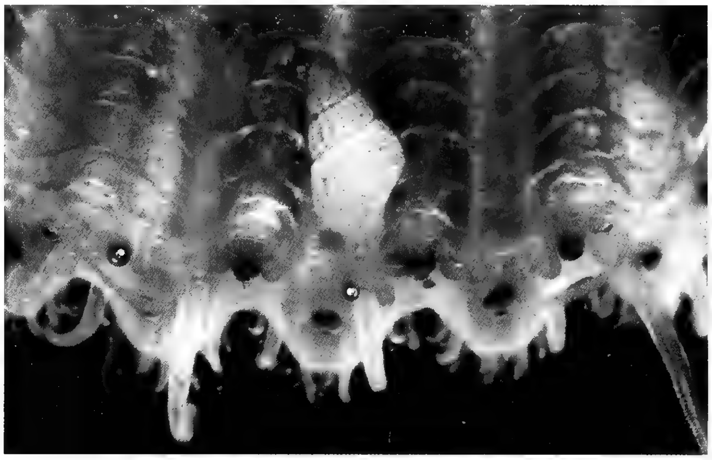

Fig. D. *Boonea seminuda* in feeding position on *Argopecten irradians*, off of North Carolina.

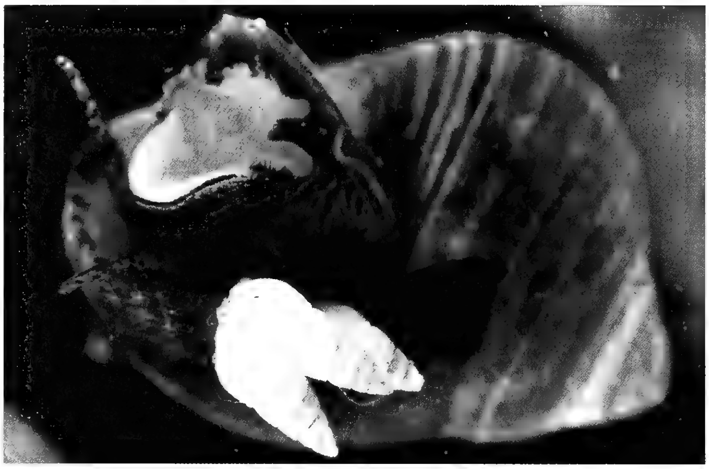

Fig. E. Three *Boonea bisuturalis* on the outer lip of *Littorina littorea*.

Fig. F. Two *Boonea bisuturalis* on outer lip of *Littorina littorea*. One can be seen actively feeding on the host's foot.

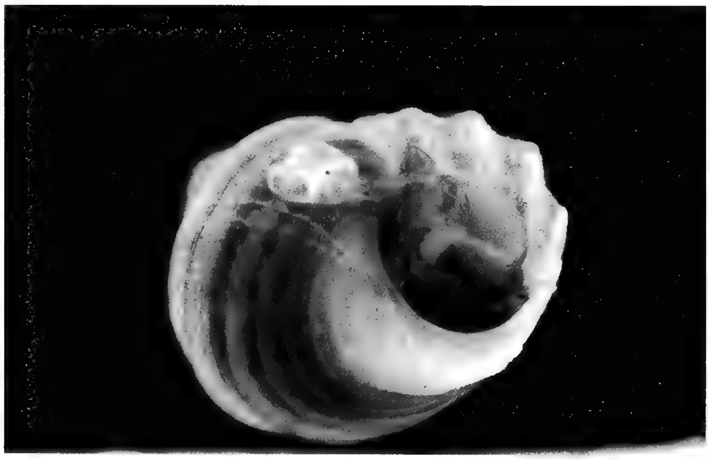

Fig. G. Young postlarval *Boonea bisuturalis* feeding on young *Littorina littorea*. Parasitic feeding commences about 10 days after metamorphosis.

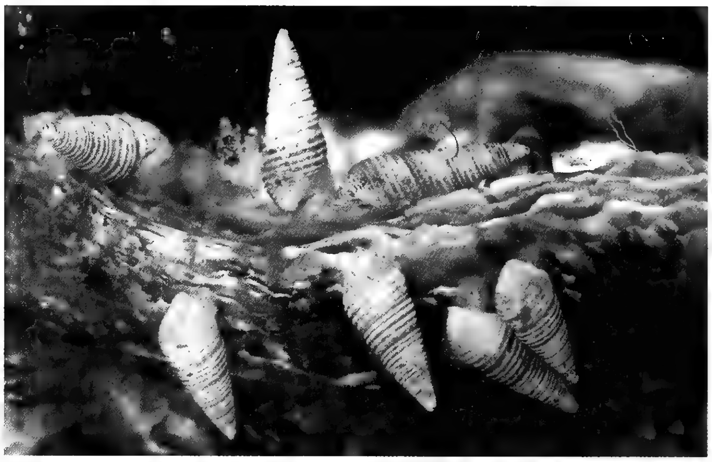

Fig. H. *Boonea impressa* clustered near edge of oyster (*Crassostrea virginica*). Such attacks have proven harmful to commercial oyster fishing.

**Fig. I. Pair of *Fargo adianthophila* on a host polychaete tube worm (*Eupomatus dianthus*).**

**Fig. J. *Fargoa dianthophila* on the "operculum" of an extended *Eupomatus dianthus* tube worm.**

**Fig. K. *Fargoa bartschi* at *Eupomatus dianthus* tube entrance.**

Pyramidellids are usually not well represented in collections. This may be due in part to their small size or to the aforementioned taxonomic difficulties. Whatever the reason, they have not proven popular, despite their unique feeding habits. This vampiric group really does deserve a second look by collectors.

**Suggested Readings:**


**Abbott, R. T.** 1972. Kingdom of the Seashell, Crown Publishers, New York.

**Ankel, W. E.** 1949. Die Nahrungsaufnahme der Pyramidelliden, Verhandlungen der deutschen zoologischen Gesellschaft, Keipzig, "1948": 478-484.

**Hori, S.** 2000. Pyramidelloidea, in: **Okutani, T.** (ed.), Marine Mollusks in Japan, pp. 702-731. Tôkai University Press, Tokyo.

**Kristensen, J. H.** 1970. Fauna associated with the sipunculid *Phascolion strombi* (Montagu), especially the parasitic gastropod *Menestho diaphana* (Jeffreys). Ophelia, 7: 257-276.

**Maas, D.** 1965. Anatomische und histologische Untersuchungen am Mundapparat der Pyramidelliden, Zeitschrift für Morphologie und Ökologie der Tiere, 54: 566-642.

**Robertson, R.** 1978. Spermatophores of six eastern North American pyramidellid gastropods and their systematic significance (with the new genus *Boonea*), Biological Bulletin, 155: 360-382.

**Robertson, R.** 1996. *Fargoa bartschi* (Winkley, 1909): a little-known Atlantic and Gulf Coast American odostomian (Pyramidellidae) and its generic relationships, American Malacological Bulletin, 13: 11-21.

**Robertson, R. & T. Mau-Lastovicka.** 1979. The ectoparasitism of *Boonea* and *Fargoa* (Gastropoda: Pyramidellidae), Biological Bulletin, 157: 320-333.

**Rosenburg, G. 2005.** Malacolog Version 4.0.2: Western Atlantic Mollusk Database, http://data.acnatsci.org/wasp/, The Academy of Natural Sciences Philadelphia, accessed on 11 Aug 2006.

**Schander, C., J. J. van Aartsen & J. X. Corgan.** 1999 ["1998"]. Families and genera of the Pyramidelloidea (Mollusca: Gastropoda). Bollettino Malacologico, 34(9-12): 145-166.

**Wilson, E. A., E. N. Powell & S. M. Ray**. 1991. The effects of host density and parasite crowding on movement and patch formation of the ectoparasitic snail, *Boonea impressa*: field and modelling results, Journal of Animal Ecology, 60: 779-804.

**Wise, J. B.** 1993. Anatomy and functional morphology of the feeding structures of the ectoparasitic gastropod *Boonea impressa* (Pyramidellidae), Malacologia, 35: 119-134.



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# Nudibranch Navigation: The Natural History of *Tritonia diomedea*

**Russell C. Wyeth**

*The giant nudibranch crawled slowly forward. Another slug remained stationary on the sea floor some meters away. As the changing tidal flow through the habitat stabilized on a new heading, the second slug was now upstream of the first. The crawling slug turned upstream towards the quiescent animal. Casting left and right with its oral veil, it advanced towards the potential mate. Contact was finally made and both animals began the long process of clockwise circling and mating, before the partners broke apart and crawled off into the distance. For us, the scientists watching these events unfold on a camera system deployed on the ocean floor habitat, two and half hours had passed on board our research vessel. Although slug behavior is slow to the human eye (not to mention tedious if the weather is beautiful above decks), when we reviewed the videos in time-lapse, the slug activities revealed a fascinating complexity. These and other videos recorded in the slug's habitat would advance our understanding of the natural history of nudibranchs and fill an important gap in over 40 years of research on this species.*

Over the last four decades the sea slug *Tritonia diomedea* Bergh, 1894 has been a research subject for a small group of neuroethologists, scientists who combine the study of both nervous systems and animal behavior. *Tritonia* and several other species of gastropod mollusks have contributed greatly to understanding neural control behavior (Chase 2002). Why? These slugs and snails have some of the largest neurons on the planet (100 times larger than most mammalian neurons), their nervous system contains "just" tens of thousands of neurons (instead of the billions found in mammals), and their behaviors, although slow, are sufficiently complex to make studying their control interesting. Researchers working with *Tritonia* have been able to explain, at least in part, the nervous control of a variety of behaviors, including crawling, feeding, and most spectacularly, swimming. More recently several researchers have laid the groundwork for studying navigation, working on both the neural control of locomotion (e.g., Redondo and Murray 2005), and the neural pathways involved in sensation (e.g., Cain et al. 2006). They are hoping to gain insight into how

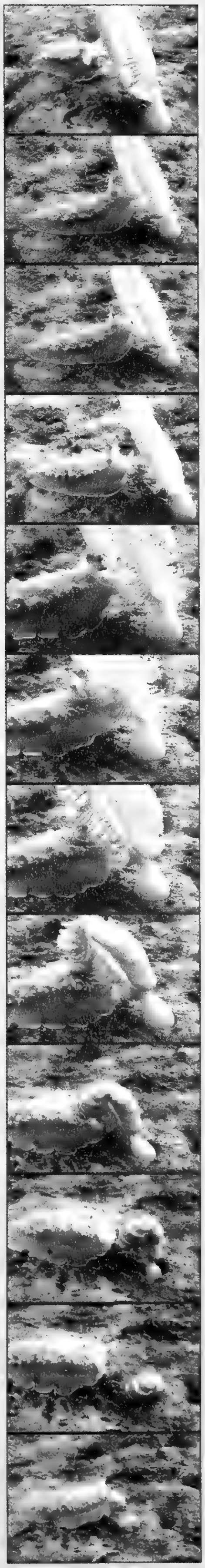
**The primary research site was near Vargas Island, in Clayoquot Sound on the west coast of Vancouver Island, British Columbia. Our vessel, the 45-foot ketch *Melibe*, provided the ideal research platform. Ample room above and below decks provided room for SCUBA equipment and the camera system that recorded the slug activities 5m below the surface. She also provided living space and recreational opportunities during the research trips. [photo credit (left): James Murray]**

nervous systems are designed to detect an animal's world, process the sensory information, and produce guided locomotion within that world.

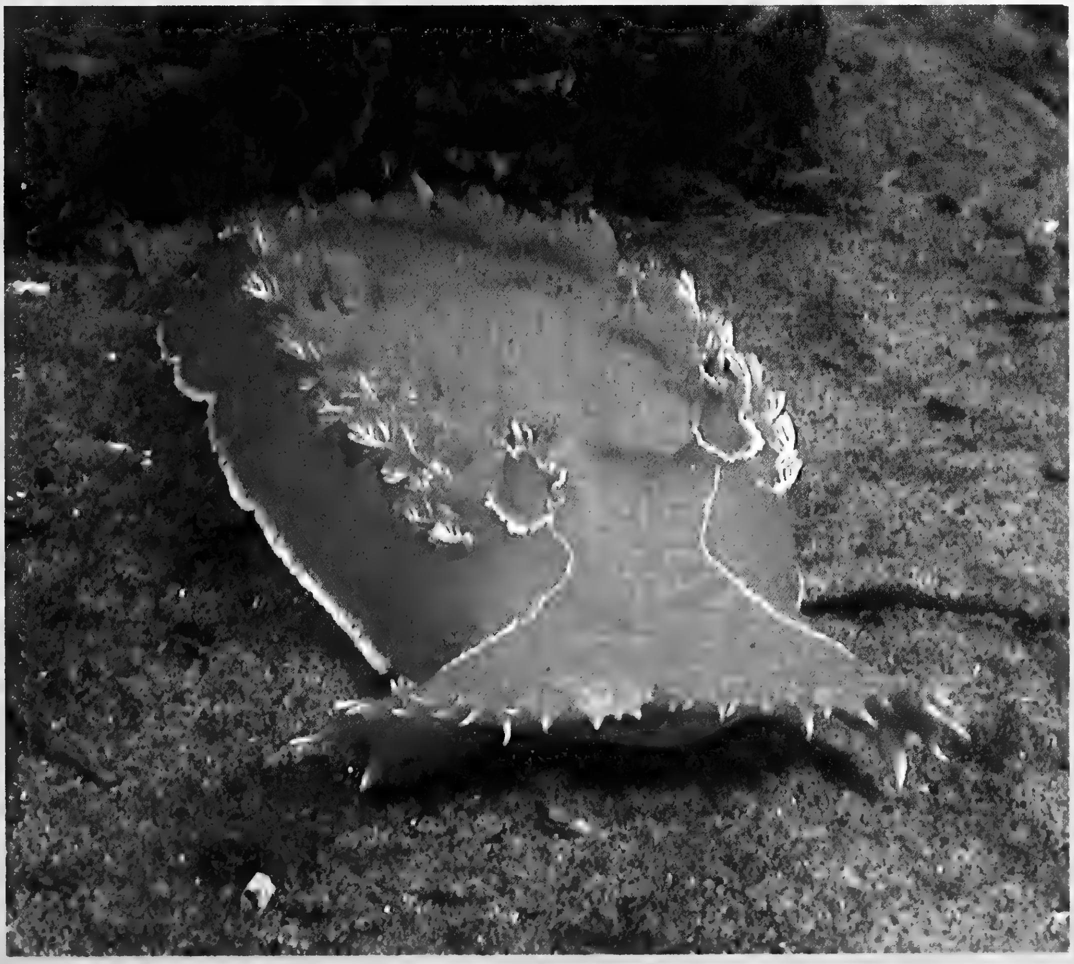
This progress, however, emphasized a missing component in our knowledge of *Tritonia*. Despite 40 years of research, no one had made a systematic survey of the slug's natural behaviors. Although it was unlikely the behaviors studied in the laboratory were wholly unnatural, there remained the distinct possibility that either the behaviors were incomplete or that certain behaviors simply had not yet been observed due to some deficit in the sensory environment found in the tanks in the laboratory. Consequently my and my colleague's interest in the slug videos was high.

Our methods were simple in concept. Anchor our boat over a sea pen bed, the natural habitat of *Tritonia*. Deploy waterproof cameras (security cameras used by many convenience stores) on poles thrust into the soft sediment of the sea pen bed. Make sure the video and power cables were all properly connected to a digital video recording system (again, originally designed for use as a security system), press record, and wait for the action to unfold. Of course wind and weather played havoc with our efforts on occasion. Crucially it turned out that we needed three anchors to keep the boat position stable to avoid its 16 tons severing the camera cables, but the system worked remarkably well. In fact, the cameras consistently recorded images slightly *better* than what divers felt

**Right: Feeding is a delicate process for *Tritonia*. The slug needs to bite the sea pen before the prey can retract into the sediment. The slug approaches from downstream, with the rhinophores, and presumably the oral veil, used to detect the odor plume spreading downstream from the prey individual. As it nears the sea pen, it raises the oral veil. After the briefest of touches, the slug stops and rears back, readying to strike. The jaws are opened and the flexible radula is thrust out, grasps a leaflet of the sea pen, and then retracts back between the jaws. The jaws are closed, severing the leaflet, and the slug is left with a small meal, while the sea pen continues to contract down into its burrow.**



**Below: A 20cm *Tritonia diomedea* approaches, looking like a Hollywood creation of an alien for a grade-B movie. This bizarre-looking creature inhabits northern Pacific subtidal waters from 5-750m.**



they were able to see underwater and we were able to collect some 510 hours of slug videos. Using a combination of these time-lapse videos and direct observation by divers, we were able to publish a description of many of *Tritonia*'s daytime behaviors in a recent issue of *Biological Bulletin* (Wyeth and Willows 2006a).

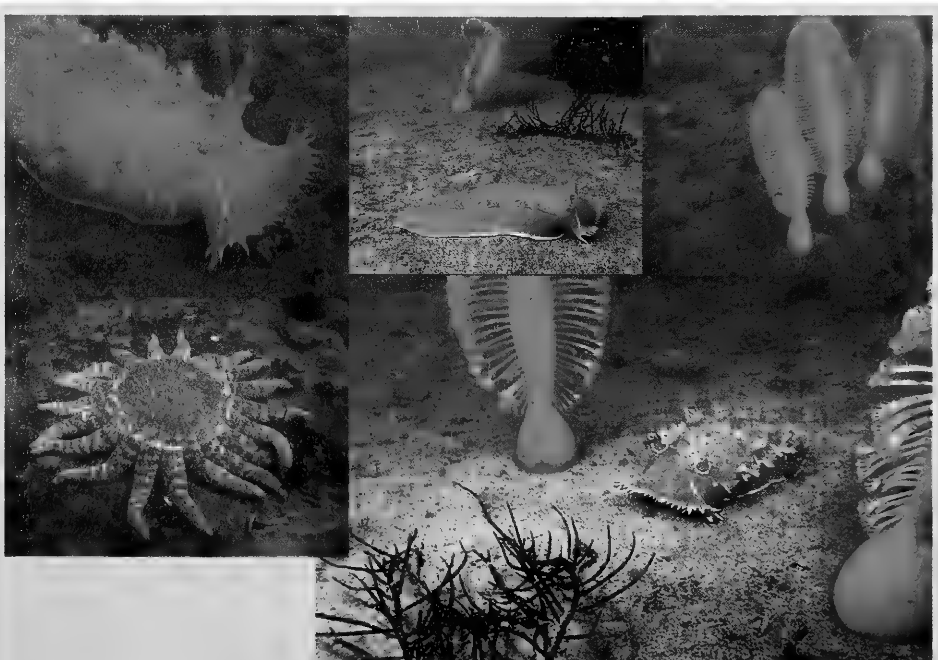
We found that *Tritonia* spend much of their time crawling amongst the scattered sea pens of their habitat searching for both food (the sea pens themselves) and mates. They also spend considerable time inactive, remaining stationary on the substratum. They occasionally encounter the predatory sunflower seastar (*Pycnopodia helianthoides*), which they avoid either by crawling away or swimming up into the water column, allowing the currents to sweep them away.

The tidal currents are crucial to their lives in other ways as well. When flow is strong, the slugs will turn to face upstream, reducing drag. They will even bulldoze a berm of sand in front of them, presumably an attempt to further reduce drag and avoid being swept off the bottom. Dislodgement can occur both as a result of oscillating wave motion and strong tidal flows and may have grave consequences since the slugs may not settle back to the sea floor before they are far beyond the bounds of the sea pen bed.

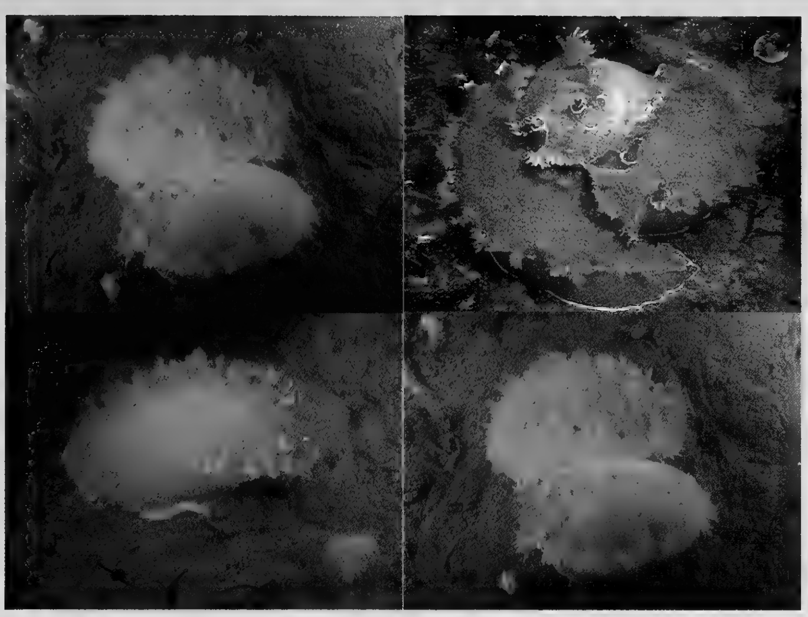
It is when the currents are more moderate, however, that they are most important to *Tritonia.* By careful analysis of our videos (Wyeth et al. 2006), supplemented by some laboratory experiments (Wyeth and Willows 2006b), we were able to determine that the slugs rely on odors carried in the flow in order to navigate. They crawl upstream in the odor plumes generated by both prey and conspecifics, but after feeding or mating with those upstream targets, they crawl randomly with respect to flow. Conversely, they crawl downstream in predator odor plumes. Meanwhile, slugs crawling outside odor plumes are less likely to crawl upstream. They may prefer to crawl cross-stream in search of odor plumes in this situation.

The videos made it clear that in *Tritonia*'s natural habitat, water motion is both continuous and erratic. The regularity of the tides does not translate into predictable flow. Rather the topography of the sea floor disrupts the tidal flow, creating eddies that result in apparently random periods of both consistent and changeable flow from a slug's point of view. Nonetheless, those currents are the most important feature of the natural environment for the slugs, providing the stimuli necessary for navigation as well as carrying the threat of removal far away from both prey and mates.

The major conclusion of our study was that *Tritonia* relies on odors and flow for navigation. This result will help guide further experiments in the laboratories of scientists working to understand neural control of navigation. In addition, the changeable flows encountered by the slugs while navigating towards a potential mate made clear another important point: slow moving animals may need a special strategy for finding the source of an odor plume (e.g., Vickers 2000; Ferner and Weissburg 2005). Most animals trying to find an odor source use a simple strategy, move upstream when the odor is detected. This works because the flow moves the odor from the source to the animal, and therefore to find the source the animal can follow the flow. But what about sluggish animals? The currents are so changeable the animal may lose the scent completely before reaching the odor source. A possibly simple addition to the strategy would be to continue following the upstream heading based on when odor was last detected. A simple strategy, perhaps for a human with excellent vision, but how could a blind slug maintain a constant heading over an uneven sea floor and buffeted by changing flows? The answer may lie in previous research on *Tritonia* that has shown they are able to detect the earth's magnetic field



**The giant orange nudibranch *Tritonia diomedea* lives in sea pen beds of the Northeast Pacific. The sea pens, a species of soft coral, form dense aggregations in habitats with both tidal flow and a sandy/muddy sea floor. They alternate between retracting into the sediment and extending their plumes up into the flow to capture planktonic particles carried in currents. *Tritonia*'s only food source is the soft corals, and their adult habitat is therefore limited to the soft coral beds. Despite the restricted diet, adults can reach 30cm or more in length. They crawl using cilia on the ventral surface of their foot. The slugs have two sensory tentacles (the rhinophores) on their head, along with an oral veil (the "moustache") that they use to detect both odors and water flows. The slugs are blind and rely on their senses of smell and flow to find prey and mates and to escape their primary predator, the giant sunflower seastar, *Pycnopodia helianthoides*.**



**Top two images: Mating for the hermaphroditic *Tritonia* is a long-lasting affair. Almost all mating events are preceded by one slug navigating up an odor plume to find a mate. After contact, the two animals align copulatory organs by clockwise circling. Copulation lasts about an hour, with sperm transferred by both partners. Already-mating pairs are highly attractive to downstream slugs, and occasionally a brief ménage à trois occurs, before the third slug supplants one of the previously mating pair.**
**Bottom two images: The soft-bodied and almost neutrally buoyant *Tritonia* are particularly susceptible to strong current gusts that can lift them off the sea floor and tumble them away downstream. To prevent this, they bulldoze small berms of sediment in front of them. The berming behavior can sometimes be so pronounced that the animals are almost buried in the sediment.**

(Lohmann and Willows 1987). Perhaps the slugs fix a compass bearing on the upstream direction while odor is detected and then continue to follow that bearing even after the scent is lost. At the moment this orienteering behavior is just a hypothesis (Murray et al. 2006). Further experiments both in the natural habitat and in the laboratory will tell whether or not it is a navigation option for *Tritonia*.

Finally, this study has highlighted two broader conclusions. First, it is important to consider the time scale on which an animal lives. At first glance most people have a poor opinion of slug behaviors; they are so slow they must be boring. Yet when seen moving in time-lapse, perhaps 100 times faster than real time, rapt observers frequently compare their activity to mice or rats. The difference lies in that our observation skills are tuned to a certain pace of life, and slugs live at a very different pace from our own. Only by manipulating our observations (speeding up the video) to better suit our own perceptions are we able to properly appreciate the slugs abilities. And this conclusion applies to not just slugs, but to all organisms that live at different time scales. Second, and most importantly, this study reiterates the importance of field biology. The observations made in the natural habitat were able to highlight that odors and flow are the two most important cues for navigating *Tritonia*. Yet *Tritonia*'s sense of smell had been almost entirely neglected in the laboratory. Now further experiments can focus on odor detection and its role in navigation. Natural history, the observation and description of natural behaviors and natural stimuli outside of the laboratory, is critical to guiding further exploration and advancing our understanding of all organisms.

## Acknowledgments

Many people helped with this research. Dr. A.O. Dennis Willows and Dr. Owen M. Woodward provided invaluable assistance throughout. Owen M. Woodward and Russell C. Wyeth share photography credits on all images, unless noted. Additional help and advice came from Dr. Shaun D. Cain , Dr. James A. Murray, and Christina P. Holmes as well as many other students, colleagues, and staff at Friday Harbor Laboratories and in the Department of Zoology at the University of Washington. The research was supported by the Conchologists of America, the National Sciences and Engineering Research Council (Canada), and the Packard Foundation.

**References:**

**Cain, S.D., Wang, J.H, & Lohmann, K.J.** 2006. Immunochemical and electrophysical analyses of magnetically responsive neurons in the mollusk *Tritonia diomedea*, J. Comp. Physiol. A: Sensory, Neural, and Behavioral Physiology 192: 235-245.
**Chase, R.** 2002. Behavior and its neural control in gastropod molluscs, Oxford University Press, New York, NY.
**Ferner, M.C. and Weissburg, M.J.** 2005. Slow-moving predatory gastropods track prey odors in fast and turbulent flow, J. Exp. Biol. 208: 809-819.
**Lohmann, K.J. and Willows, A.O.D.** 1987. Lunar-modulated geomagnetic orientation by a marine mollusk, Science 235: 331-334.
**Murray, J.A., Estepp, J., and Cain, S.D.** 2006. Advances in the neural bases of orientation and navigation, Integr. Comp. Biol., pp. 1037.
**Redondo, R.L. and Murray, J.A.** 2005. Pedal neuron 3 serves a significant role in effecting turning during crawling by the marine slug *Tritonia diomedea*, J. Comp. Physiol. A 191:435-444.
**Vickers, N.J.** 2000. Mechanisms of animal navigation in odor plumes, Biol. Bull. 198: 203-212.
**Wyeth, R.C. and Willows, A.O.D.** 2006a. Field behavior of the nudibranch mollusc *Tritonia diomedea*, Biol. Bull. 210: 81-96.
**Wyeth, R.C. and Willows, A.O.D.** 2006b. Odours detected by rhinophores mediate orientation to flow in the nudibranch mollusk, *Tritonea diomedes*, J. Exp. Biol. 209: 1441-1453.
**Wyeth, R.C., Woodward, O.M., and Willows, A.O.D.** 2006. Orientation and navigation relative to water flow, prey, conspecifics, and predators by the nudibranch mollusk *Tritonia diomedea*, Biol. Bull. 210: 97-108.

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## Book Review:

# Out of My Shell

### by S. Peter Dance

7 x 9.5 inches, C-Shells-3, Inc., Sanibel Island, FL
and Direct Impressions, Sanibel Island, FL
212 pages, ISBN 0-9769567-0-5

The latest book by noted author S. Peter Dance, of Carlisle, England, ventures down a slightly different path, as he takes readers through a collection of shell lore, anecdotes and personal memories culled from a lifetime of involvement in the field of conchology. The book, titled *Out Of My Shell - A Diversion for Shell Lovers*, is the first project of the publishing group C-Shells-3, which includes Peter and partners Anne Joffe of Sanibel, Florida, and Harlan Wittkopf of Algona, Iowa.

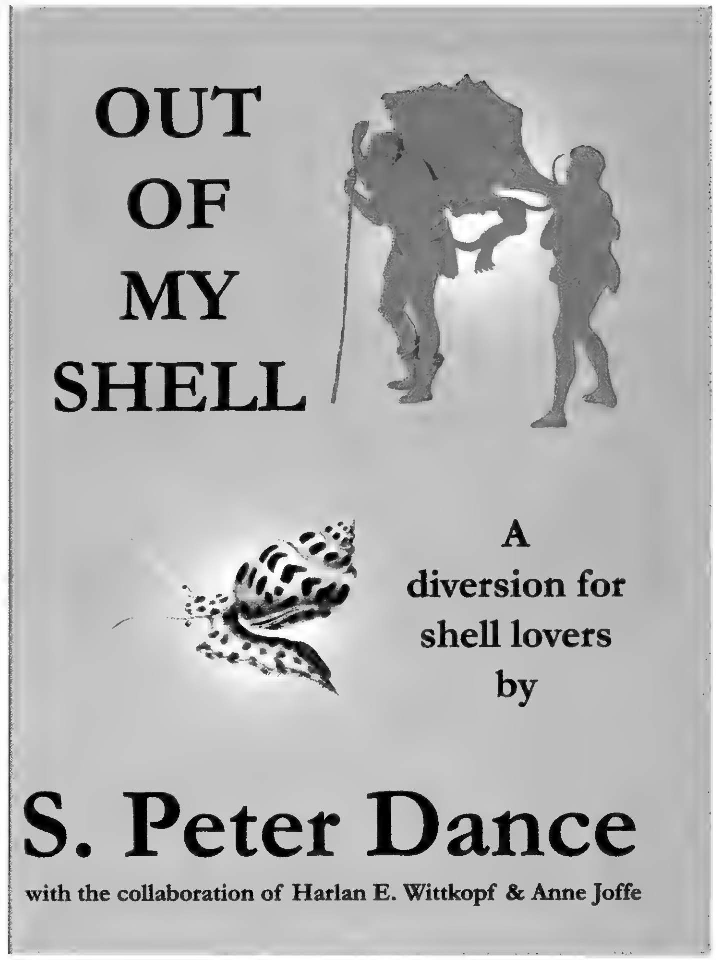
The book is sprinkled with memories from his years as a curator of molluscan shells at London's Natural History Museum, Manchester Museum, and the National Museum of Wales, Cardiff, and his worldwide travels in pursuit of shells. This entertaining nonfiction romp through Peter's lifetime of shell adventures and knowledge premiered at the COA 2005 convention in Punta Rassa, Florida. The author and his partners Anne and Harlan were all on hand to sign a limited edition run of hard-covered volumes for sale to attendants and guests.

In the foreword, Peter refers to the book's contents as "A Pot Pourri of Conchological Trivia," but that is a modest assertion. In 212 pages covering 45 short chapters, closing thoughts, acknowledgments, index, and a list of scientific names included in the book, readers are taken on a joyride through this erudite author's witty writing style and enjoyably effusive vocabulary. Bits of shell data from historical, and in some cases hysterical (you *will* laugh!), sources are woven into charming little stories that entertain as well as inform.

The book is lavishly illustrated with color, black and white photographs, and line drawings, including a dozen or so beautiful examples of Peter's own artistic drawing style. Several shell poems by the author are also included, showcasing Peter's talent with metaphor.

Peter also draws from ancient shell history for key decorations, such as the wavy line with a stylized shell on both ends after each chapter [a murex shell motif that occurred on ancient Minoan pottery, among the earliest shell motifs in Western art]. Other recurring shelly embellishments sprinkled through the tome are a heart-cockle motif drawn by Peter, a cone shell illustration that is Harlan's symbol on his own published works, and Anne Joffe's choice of a chiton from a textbook illustration. These are used to separate short commentaries culled from the author's collection of shell-related notes accumulated over his lifetime.

Between the symbols and artwork, the reader will be continually entertained with globetrotting shell adventures, such as the "lost at sea" episode in the Gulf of Oman with Don & Eloise Bosch and the RAF adventure with the desert snails. Each turn of the page brings more molluscan musings by this multi-talented author of many shell-related volumes.




The book is now available to the public in a soft-cover version for $20.00 and is sold in Florida at the Bailey-Matthews Shell Museum on Sanibel Island, the She Sells Sea Shells stores in that area, and Janowsky Books (https://www.shop.mdmbooks.com/splashPage.hg). It can be ordered online through SanibelSeashells@aol.com and several other book websites. There are a few of the $75.00 hardcover limited edition books still available.

*Out Of My Shell* is an interesting, memorable and thoroughly entertaining treasure of a book in which the author expounds on any subject matter that can be tied to shells. Royalty, color and design, architecture and decoration, danger, mystery (and murder!), music and humor are all part of S. Peter Dance's latest venture into the world of shell books. *Out of My Shell*, a personal stroll through some of the many by-ways of conchology, would be a gem in any shell collector's library.

Rusti Stover
7714 Renwick #122
Houston, TX 77081-7113
rusti@chilitech.com

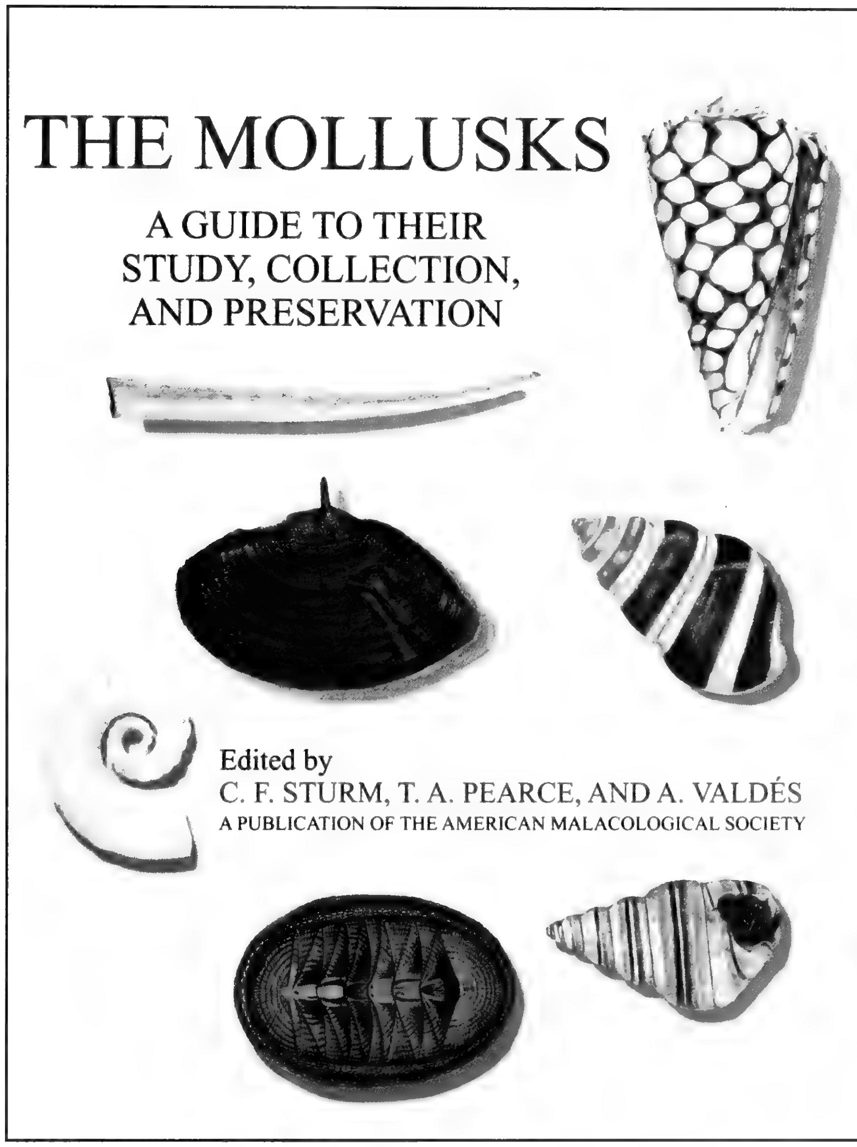
Bio Note:
Rusti Stover of Houston, Texas, is a freelance writer of nonfiction articles as well as a shell collector and a member of COA, the Houston Conchology Society, and the Sea Shell Searchers of Brazoria County.

## Book Review:

# The Mollusks: A Guide to Their Study, Collection, and Preservation

**Edited by**
**C.F. Sturm, T.A. Pearce, & A. Valdés**

7.5 x 10.75 inches, American Malacological Society, Pittsburgh and Universal Publishers, Boca Raton
445 pages, ISBN 1-58112-930-0 (paperback), 1-58112-931-9 (e-book), $35.95 (Paperback)
http://www.universal-publishers.com




To begin with, a disclaimer: I was a fan of this book before it was even published. I knew many of the people involved, I knew some of the topics being worked on, and I knew as a shell collector I needed such a book. Once obtaining a copy I became an avid fan. Published by the American Malacological Society (AMS), this tome (445 pages) brings together over two-dozen contributors (knowledgeable amateurs and professionals in malacology) whose work was guided and superbly edited into a volume covering an extensive range of subjects within malacology. Shell collectors, conchologists, malacologists, amateur or professional: whatever your interest in mollusks, there is now a single source reference that addresses many of the aspects, from simple to complex, of this field.

An earlier (and limited) version, *How To Study & Collect Shells*, was published in four volumes between 1942 and 1974 by the American Malacological Union (AMU, now renamed the AMS). A lot has happened in the three decades since this last volume and *The Mollusks* serves well to update and greatly expand on the previous work.

Topics range from how to photograph shells (camera or scanner, micro or macro, normal light or ultraviolet, in the field or the lab, etc.), to how to collect (equipment, techniques, marine, land, SCUBA, dredge, etc.), to fossil mollusks (collecting, curating, identifying, etc.), to how to maintain mollusks in captivity. There are chapters on taxonomy, organizing and running a shell club, cladistics, and getting rid of a shell collection. A separate and extensive chapter is provided on each of the seven classes of mollusks (Gastropoda, Bivalvia, Polyplacophora, Aplacophora, Monoplacophora, Scaphopoda, and Cephalopoda). There is a chapter on conservation issues and one on molluscan literature. The literature chapter lists types of molluscan literature, as well as providing major references based upon geographic area and major molluscan family.

If you are beginning to get the idea that this is an extensive and thorough research reference, you are correct. There are many other chapters (unionids, marine bivalves, landsnails, etc.) and two appendices. Appendix 1 (a – d) is an alphabetical listing of mollusk features (a = structural features of gastropods, b = gastropod shell forms, c = structural features of bivalves, & d = descriptive bivalve terms). Each term is defined and illustrated with a line drawing of a shell indicating that particular feature. Appendix 2 is a comprehensive outline of each chapter. This seems to be provided in lieu of an index and is at first a bit offsetting. I missed an index. With just a little use, however, you will find that the chapter outline (it is quite thorough) serves as well and maybe better for most uses. There is also a glossary of terms not defined in Appendix 1.

If your interest in conchology or malacology goes beyond having a bright and shiny seashell on the mantle (and it must or you wouldn't be reading this), then you owe it to yourself to buy this book. You will help support a great organization (AMS) and you will add a useful and comprehensive reference tool to your library.

Tom Eichhorst
thomas@rt66.com

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# 2007 COA Convention Update

Preparations for the 2007 Conchologists of America Convention are well underway. The Oregon Society of Conchologists is planning to make your visit to Portland a memorable experience. The program includes speakers from the Pacific Northwest on an array of interesting topics. The field trips will give you your money's worth whether you choose to travel to the Oregon coast for shell collecting or fossil collecting, take the Columbia Gorge and Mt. Hood Loop tour, travel to Mt. St. Helens, or take the Willamette Valley wine tour. All of the trips are full-day trips.

There has been one modification to the fossil collecting trip. Initially we announced that this trip would also be considered a coastal sightseeing trip, with those persons not interested in collecting fossils being able to take a sightseeing drive while the fossil hunters are collecting. Because of complexities in coordinating the field trip, it has been changed to strictly a fossil collecting trip. Both the fossil collecting trip and the shell collecting trip will, however, include a number of scenic stops on the Oregon coast.

Because of the distance most people will travel to the convention this year, this year's shell show will be a Single Shell Competitive Show. There will be competitive exhibits in each of three categories:

**Chardonnay Category:** Self-collected worldwide single shell
**Pinot Noir Category:** Open category worldwide single shell
**Riesling Category:** Northeastern Pacific Coast (California to Alaska) single shell (any source)

Exhibitors may enter one shell in each category. Exhibitors must provide their own shell cases. Oregon is known for its interesting lighthouses and where there are lighthouses there are shells nearby. For this reason we've decided to have a "My Favorite Lighthouse Competition." The following categories will give you a chance to stretch your creativity.

- Your favorite lighthouse (any source)
- Lighthouse featuring 1 or more shells (any source)
- Lighthouse featuring 1 or more shells (created by the exhibitor)
- Lighthouse photography by the exhibitor
- Lighthouse stitchery by the exhibitor (embroidery, quilting, etc.)
- Lighthouse other media (painting, pencil sketching, etc.) by the exhibitor

This competition will be judged by the membership.

Do you have shells or shell-related items you can donate for the silent auction, oral auction, raffle or door prizes? Please send your tax-deductible donations to Duane and Shannon Hann after April 1st. They will be in Fiji until that time. Or, if you are planning to attend the Sanibel Shell Show March 1-3, you can give your items to Ken Matthys during the show and he will take them to Oregon for you. If you plan to send your donation to the Hann's via U.S. Postal Service, their address is P.O. Box 403, Mulino, OR 97042-1135. If you send it by UPS or FedEx, the delivery address is 28603 Heisinger Lane, Mulino, OR 97042. They can be contacted by phone (503) 759-3710 or e-mail dshann@molalla.net. The phone number for Ken Matthys is (239) 472-2885 or you can send him an e-mail at joycematthys@aol.com.

Be sure to make your registration at the Monarch Hotel and Conference Center before June 14th to guarantee lodging. Call toll free within the U.S. (800) 492-8700. For international calls: 1-503-652-1515. The e-mail address for reserving your lodging is reservations@monarchhotel.cc.

The convention registration packet will be included in the next issue of the American Conchologists but you can check the COA web site where we hope to have the registration forms available for early registration. The Oregon Society of Conchologists is looking forward to welcoming you to Portland for "Chardonnay & Shells."

***See you in Portland***
***1-5 August 2007***

# Market Collecting

## By Joaquin Inchaustegui


In the December 2001 issue of *American Conchologist*, vol. 29, no. 4, Robert G. Howells wrote about "A novel collecting habitat." He described his visit to Houston, Texas, to help the Texas Game and Fish Department identify illegally imported and prohibited fishes and mollusks that were for sale in the Houston area Asian fish markets.

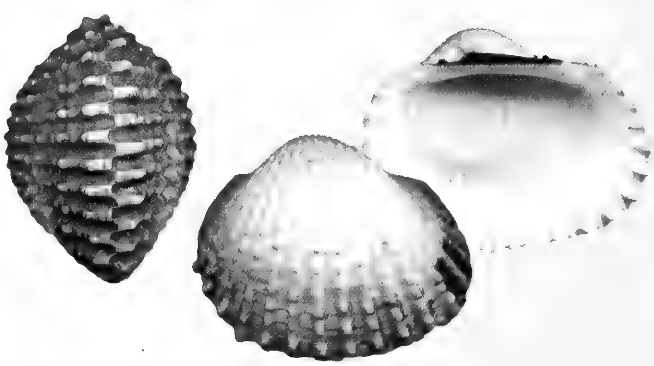
In June 2006 I was in Houston celebrating Father's Day with my family and decided to use this opportunity to investigate Howell's novel collecting spots. My daughter Sandra and I drove to our first market where we found lots of live, fresh on ice, and frozen fish. The market had large fish tanks with live *Tilapia*, various catfish, saltwater redfish and drums, lobsters, many different species of crabs, and live oysters. There were also shark fins and dried squid and octopus, but I was looking for shelled mollusks and this market did not have what I wanted. What it did have was a pungent odor familiar to most shell collectors. The odor, like that of many fish markets in summer, was strong enough that my daughter covered her nose and mouth with a cloth and was reduced to shallow breaths. She actually seemed to be in severe distress after a few minutes of this smell.

In an attempt on my part to remain in her good graces and a recognition that one more visit was probably the limit of her patience, I promised Sandra we would only visit one more market. Our next stop was the Hong Kong Food Market where we found the usual assortment of frozen and live fish as well as two species of live bivalve and a live periwinkle. I purchased a pound of each of these species and we were back to fresh air as fast as possible, much to my daughter's relief. I believe I actually felt her pushing me as we headed for the exit.

Back home I found I had purchased some very common species. One of the bivalves was *Anadara granosa* (Linnaeus, 1758) and the other was *Venerupis* (*Ruditapes*) *philippinarum* (Adams & Reeve, 1850), both common Pacific bivalves. The periwinkles were difficult to identify as this was a species I thought I had not seen before.

Because my shell collection and all of my reference books were lost in Hurricane Katrina. I sent the periwinkles to a friend who gave a "best guess" identification of *Littorina squalida* Broderip & Sowerby, 1829, from Japan. The Vietnamese operator of the market told me they were from Vietnam and the Hispanic man behind the counter told me, in Spanish, that they were from Seattle. Sandra asked him if he meant that they were imported through Seattle, but originated elsewhere, to which he shrugged as if to say, "who cares," and walked away.

It would seem I had shells from Japanese waters that were probably collected by Vietnamese fishermen and then shipped to Houston, via Seattle. While this is not what most shell collectors are looking for in locality data, it says several things about these shells. They are hardy and able to survive a lengthy period out of



***Anadara granosa* (above), 36mm; *Venerupis philippinarum* (below), 52mm, Houston, Texas, fish market.**

*Littorina littorea*, **29mm, Houston, Texas, fish market.**

Joaquin Inchaustegui
joaquininc@aol.com

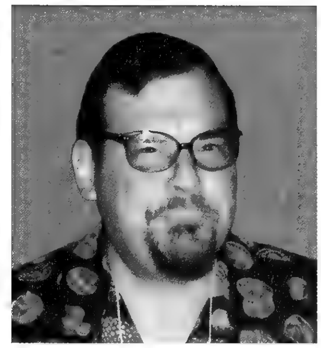
Author's additional note: I sent samples of my fish market shells to six collectors and asked for "best guess" identification. We all agreed on *Anadara granosa* (Linnaeus, 1758). A species that is widely distributed through the Indo-Pacific.

Then things fell apart. The periwinkle was tentatively identified as *Littorina squalida* Broderip& Sowerby, 1829. Another said, "The periwinkle sure looks like the *L. squalida* as illustrated in 'Marine Mollusks in Japan'." Then still another said, "Looking in my shell books I do not show the species as being *L. squalida*. A collector that lives near Vancouver, British Colombia, Canada, loves to go to the Chinese market and get shells there but when he asks where they came from they never tell him. This may be the same thing with your man in the Honk Kong Fish Market."

Then Dr. Henk Mienis, curator of the Mollusc Collection of the Tel Aviv University (and curator of the Hebrew University in Jerusalem), identified this periwinkle as "perfect specimens of *Littorina littorea* (Linnaeus, 1758)." This was originally a Western European Atlantic species that, during the time of the Vikings, was brought to North America and since then has slowly but steadily extended its range along the east coast. It is harvested locally for food.

The clam shell was at first provisionally identified as *Asaphis violascens* (Forskal, 1775). This was then corrected to *Venerupis* (*Ruditapes*) *philippinarum* (Adams & Reeve, 1850) and Dr. Mienis added that this was originally a Philippine shell that now is commercially cultured almost around the world in subtropical seas.

So it is not wise to collect shells without accurate locality data unless you want these shells merely as decorations.



# Jordan Star's Web Picks

The Science & Nature Directory, **http://www.idscaro.net/sci/** This is a large site with LOTS of images. I only saw a small section of the site as I did not have time to navigate it all. A site to see if you want to identify shells. Some folks you will recognize helped with the identifications of certain shells. DO VISIT!!

Mollusk Collections Online at the Carnegie Museum of Natural History, **http://collections.carnegiemnh.org/mollusks/specimen/** This is a large site with an extensive database and several links, including one to a land snail site. Search the database for shells, minerals, plants, vertebrates, etc. It is much more than a shell web site, and includes museum exhibits, education area, research area, etc. You can easily spend all day at this site. VISIT!!

Museum of New Zealand, **http://www.tepapa.govt.nz/TePapa/English/** I didn't find any shell info or pictures. Museums are an important part of the shell world and this site is worth a visit. There are several areas of interest, including: a kid's area, a learning area, a collections online search, etc. The navigation menu is hard to see and the menu is at the top portion of the page. In other words, the link you clicked requires scrolling down on the new page to view the information you want. The museum also has links to food, catering, and the like that might be useful if you visit NZ.

Mote Marine Laboratory, **http://www.mote.org/index.php?submenu=Home&src=** I did not notice any shell items, but this is where we had a COA welcome party when we had the convention in Tampa. Check the "newsroom" for ongoing activities and programs. There is also an online magazine. Click on the "aquarium" link for several interesting features, including live video of some of the critters.

The Living World of Mollusks, **http://www.weichtiere.at/Mollusks/inhaltsverzeichnis.html** A long web address but the site is full of information. It has a tricky navigation menu. This site is a great tool for kids to learn about mollusks. The images are fair. Give it a try.

Links good, 9-27-06

# 2007 SHELL SHOWS & RELATED EVENTS (Jan. – Aug. 2007)

**Subject to change, verify with individual organizations.**

Jan. 19-21 **SPACE COAST SHELL FESTIVAL**, Melbourne, FL
2007 The Melbourne Auditorium, 625 E. Hibiscus Blvd.
Jim & Bobbi Cordy, 385 Needle Blvd.
Merritt Is., FL 32953 (321) 452-5736
E-mail: corshell@earthlink.net

Jan. 26-28 **BROWARD SHELL SHOW**, Pompano Beach, FL
2007 Pompano Beach Rec Center, NE 18th Av. & NE 6th St.
Linda Sunderland, 3970 NW 39th Street
Sunrise, FL 33351 (954) 749-9858
E-mail: klshells@mindspring.com

Jan. 27-28 **NEW ZEALAND SHELL SHOW,** Wellington, NZ
2007 Deirdre Standish, 116 Te Anau Road, Hataitai,
Wellington, New Zealand 64 (49) 386 554
E-mail: deirdre.standish@clear.net.nz

Feb. 16-18 **SARASOTA SHELL SHOW**, Sarasota, FL
2007 Sarasota Municipal Auditorium, Tamiami Trail
Fran Schlusemann, 11328 Rivers Bluff Circle
Bradenton, FL 34202 (941) 739-0908
E-mail: hanksfran@aol.com

Feb. 24-25 **ST. PETERSBURG SHELL SHOW**, Seminole, FL
2007 - *Note: New Location* -
Seminole Recreation Center, 9100 113th St. N.
Bob & Betty Lipe, 348 Corey Avenue
St. Pete Beach, FL 33706
(727) 391-2197; FAX: 360-3668
E-mail: blipe@tampabay.rr.com. Exhibit form available at: http://web.tampabay.rr.com/shellclub

Mar. 1 - 3 **SANIBEL SHELL SHOW**, Sanibel, FL
2007 Sanibel Community Center, Periwinkle Way
Anne Joffe, 1163 Kittiwake Circle
Sanibel, FL 33957-3605 (239) 472-3151
E-mail: sanibelchiton@aol.com

Mar. 10-11 **TREASURE COAST SHELL CLUB SHOW**,
2007 Jensen Beach, FL
Langford Park Field House, 2369 N.E. Dixie Hwy
Carole Marshall, 932 Cochran Drive,
Lake Worth, Florida, 33461-5711 (561) 582-2148
E-mail: marshalldq.aol.com

Mar. 17-18 **XIXème RECONTRES INTERNATIONALES**
2007 **DU COQUILLAGE,** Paris, France
Bourse de Commerce, 2 rue des Viarmes, 75004
Paris, France
M. & D. Wantiez, 88, Rue du General Leclerc
95210 Saint Gratien, France 33 (1) 34-17-00-39
E-mail: wantiez.mada@wanadoo.fr

Mar. 15-17 **MARCO ISLAND SHELL CLUB SHOW XXIV**,
2007 Marco Is., FL
Marco Presbyterian Church, Elkcam Circle
Amy Tripp, 961 Swallow Ave., #208
Marco Island, FL 34145 (239) 393-1770

April 28 **BRITISH SHELL COLLECTOR'S CLUB**
2007 **CONVENTION,** Essex, England
Theydon Bois Community Centre, Essex
Tom Walker, 38 Redlands Road
Reading, Berkshire RG1 5HD, England
44 (118) 987-4294
E-mail: tom@tmwalker.co.uk

May 5 - 6 **XVII BELGIUM INTERNATIONAL SHELL**
2007 **SHOW**, Antwerp, Belgium
Schijnpoort, Schijnpoort Straat
Charles Krijnen, Burgemeester Jansenstraat 10
NL-5037 NC Tilburg, Nederland 31 (13) 463 0607
E-mail: bvc.shellshow@planet.nl
Web site: www.bvc-gloriamaris.be/beurs_e.htm

May 26-27 **SUNCOAST CONCHOLOGISTS' SHELLERS**
2007 **JAMBOREE,** Dunedin, FL *-Venue address to be decided -*
Alice Monroe, 2648 Timbercrest Circle West
Clearwater, FL 33763-1626 (727) 796-5115
E-mail: Monroe@spjc.edu

Jun. 9-10 **JACKSONVILLE SHELL SHOW,** Jacksonville, FL
2007 Morocco Shrine Temple, 3800 St. Johns Bluff Road
Judy Blocker, 2109 Beach Avenue
Atlantic Beach, FL32233-5932 (904) 246-4012

Jul. 14-15 **KEPPEL BAY SHELL SHOW,** Yeppoon,
2007 Queensland, Australia
Yeppoon Town Hall
Jean M. Offord, 277 McDougall St.,
N. Rockhampton, Qld. 4701, Australia (7) 4928-3509

Jul. 15-20 **WORLD CONGRESS OF MALACOLOGY**
2007 **JOINT UNITAS & AMERICAN MALACOLOGICAL SOCIETY MEETING,**
Antwerp, Belgium
Univer. of Antwerp, Groenenborger Laan 171, B-2020, Antwerp
Dr. Thierry Backeljau
E-mail: wcm@naturalsciences.be 32 (2) 627-4339
Web sites: www.ucd.ie/zoology/unitas & www.malacological.org

Jul. 21-22 **TOWNSVILLE SHELL SHOW**, Townsville,
2007 Queensland, Australia
Cutharinga Bowls Club on Harold Street, West End
Glenda Rowse, 19 Farrell Street
Kirwan 4814, Queensland, Australia (7) 4773-2817

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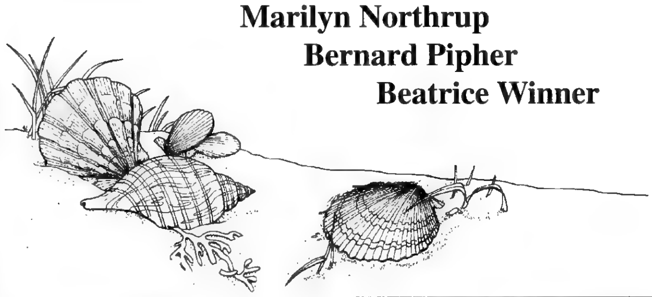
## In Memoriam

**Grant Baldwin**
**Lillian Berryman**
**Twila Bratcher-Critchlow**
**Harald Douté**
**Marilyn Northrup**
**Bernard Pipher**
**Beatrice Winner**



# 2007 COA Grants Program

I am glad to announce that the Conchologists of America Grants Committee is requesting applications for the 2007 COA Grants Program. Grants in amounts up to $1,500 will be available to qualified persons undertaking field or laboratory research on Recent or fossil mollusks.

The competitive grant awards are made only to citizens or permanent residents of the Americas, including the Caribbean nations, or to students attending graduate schools in the United States. American students pursuing academic degrees outside the US are also eligible.

The committee consists of Dr. Henry Chaney (Santa Barbara Museum of Natural History), Dr. Gary Rosenberg (Academy of Natural Sciences of Philadelphia), and yours truly. Please check the Web at http://www.conchologistsofamerica.org/grants/ for more information, application instructions, and other requirements.

The site also provides a list of funded research projects ( http://www.conchologistsofamerica.org/grants/grantees.asp). And remember, the deadline is February 28, 2007.

Best wishes,

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# Minus Tide Adventures in Downeast Maine

**By Kevin Czaja**
**All photos by Leo Kenney**

When one commits to a seashell collecting adventure, it's best not to set one's expectations too high. Perhaps this state of mind is a reflection of growing up near the Long Island Sound beaches in Connecticut that never quite left me with a "Sanibel Island" kind of feeling. So when my friend Brian Cassie (like myself an avid New England mollusk enthusiast) asked me to join him for a shallow water shelling exploration around Eastport, Maine, my expectations were not lofty. We decided to embark on this trip in part to help with an ongoing research project of ours. Brian and I have been working to create, as completely as possible, a list of all the marine mollusks one could hope to find in relatively shallow water from New Jersey to Maine. Together we have done extensive collecting in areas from Long Island, New York, to southern Maine, but neither of us had first-hand experience near the Canadian border (we are also limited on the New Jersey end and another trip is certainly in the cards).

Conditions for our trip were about as favorable as could be. It was mid-August, so getting wet would not pose a major problem (though the water was still too cold for full fledged swimming). We would also have plenty of summer sunlight to maximize a long collecting day. Over the three-day weekend (August 19-21, 2005) there would be two minus tides per day (in a Bay of Fundy influenced area where the natural drop is regularly around 7 meters). Although available literature did not tell much about shallow water collecting possibilities around Eastport, the town had a general reputation as a good collecting spot. All these factors pointed to a productive trip, but seemingly favorable conditions had led to disappointment for me more than once in the past. We set a goal during the 6-hour drive from Boston to Eastport to top 50 species for our long-weekend collecting adventure.

When Brian and I departed, we had a list of shallow water Northeastern marine mollusks of just under 200 species. By trip's end we added 18 species that had never before (to my knowledge) been reported as occurring in New England shallow water. Additionally, we found 26 species we had never before found live and more than doubled our weekend expectations by finding more than 100 species (83 marine). Not bad for what amounted to about 48 hours of collecting. Let me tell you about it...

**FRIDAY AUGUST 19th: Stop A:** Although the 6+ hour trip north was by no means a hop and skip, the time passed easily through good talk, setting fun weekend mollusk challenges (i.e., who could find the biggest limpet, etc...), and the "hope" that springs eternal from the start of every collecting trip. We also enjoyed a pleasant visit to Brian's childhood home and 4th grade school in Brewer, Maine. Our first priority as we approached our destination was to get some food. Perhaps our hunger was increased driving through all the local blueberry barrens in Deblois, Maine. We decided to stop at Helen's in Machias (appropriately famous for its blueberry pie). As it was the afternoon near high tide, we thought we would ask around for information on any local shell piles. There's nothing like a good scallop dump to take away the blues of a bad tide. We couldn't turn up a scallop dump, but Brian found out that a short distance away was a business notorious for dumping shells out on its beach (Look's Seafood in Whiting, Maine). We headed to this first collecting destination.

We talked to a very friendly representative from Look's who in addition to giving us permission to collect on their property, told us a little bit about things we could expect. For one, she explained that the shells they had dumped came "from a little bit further south" and not directly off the adjacent beach. Secondly, she warned that it might be a bit stinky back there. Lastly (and most importantly), she explained that the beach adjacent to their business happens to have an excellent outcrop of Pleistocene clay, from the Presumpscot Formation, 11,000-15,000 years ago, and is filled with fossil shells. Now that was a nice surprise!

Our host turned out to be correct on all accounts. The dumped shells were certainly of a more southern bent, but not just from southern Maine as she suggested. Considering we found stout tagelus (*Tagelus plebius* (Lightfoot, 1786)) which doesn't range north of Cape Cod, Massachusetts, and common rangia (*Rangia cuneata* (Sowerby, 1831)) which is not supposed to be found north of Virginia, I think she miscalculated a bit. She was on the mark about the stink, unfortunately, but this improved as we walked down the beach to where there were loads of fossil shells littering the ground. Most were Arctic yoldia (*Portlandia arctica* (J. E. Gray, 1824)). There were a fair number of matched pairs and better yet, specimens with perfectly preserved periostracum. Other highlights included Belloti's nut clam (*Nucula belloti* Adams, 1856) and Greenland cockle (*Serripes groenlandicus* (Mohr, 1786)). All of these species are still alive today; however, with the exception of the Greenland cockle, they are restricted to Arctic seas. This was a very encouraging start to our collecting adventure!

**Stops B & C:** With the tide receding fast, we continued down Route 191. We hit a stop near a river mouth pouring into Little Machias Bay in Cutler, but there was very little of interest. Driving further we spied a sign for Destiny Harbor Road. I think you can say we had no choice but to follow it! I should mention that in addition to our desire to generally survey the shallow water mollusks of northern Maine, we had a secondary goal to find some living nudibranchs. Was it fate?! At a floating dock off Destiny Harbor Road we encountered a whole bunch of bushy-backed nudibranchs (*Dendronotus frondosus* (Ascanius, 1774)). These pretty pink and highly ornamented mollusks stood out in bright contrast to the leafy green algae they inhabited.

**Stops D, E, & F:** We were aware that our first minus tide was only a few hours away. We planned to take advantage of it in West Quoddy, Maine. We hit the beach directly across the road from Carrying Place Bog. This was another place where Pleistocene fossils abound (and a great place to see a cross section of the peat on which the bog rests). Here we found more Arctic yoldias as well as truncate soft-shelled clams (*Mya truncata* Linnaeus, 1758)) and minute and Müller's nut clams (*Nuculana minuta* (O. F. Müller,

1776) and *Nuculana pernula* (Müller, 1779)). As these were all species I had never found before, I was pretty excited.

As the peak minus tide was an hour away we moved to West Quoddy Head State Park (the easternmost place in the continental U. S.) where we could find lots of typically sub-tidal rocks to turn over and explore. Right off the bat I was delighted with many helicene top shells (*Margarites helicinus* (Phipps, 1774)) and my first-ever pale lacuna (*Lacuna pallidula* (da Costa, 1778)). And if we were pleased about out first nudibranch in Cutler, we were ecstatic here. We found a total of four species: bushy-backed nudibranch, salmon-gilled nudibranch (*Coryphella salmanacea* (Couthouy, 1838)), hairy dorid (*Acanthodoris pilosa* (Abildgaard in Müller, 1789)), and muricate dorid (*Onchidoris muricata* (Müller, 1776)). We were psyched as we checked in at the Crossroads Motel in Pembroke.

**SATURDAY, AUGUST 20th: Stop G:** We got up at the crack of dawn to make the first minus tide of the day. For Brian this was old hat. For me, a hopeless nighthawk, it was a tad more of a challenge. After Friday's success, however, I was as eager as Brian to get back in the water. After a beautiful sunrise, we got down to business in Eastport harbor. We poked around a bit at the Deer Island Ferry Landing, trying our best to avoid stepping on what was essentially a "sea" of green sea urchins (*Strongylocentrotus droebachiensis* (Müller, 1776)). Pay dirt was a rocky area in the northernmost corner of the beach.

It was here that we spied our first chitons. Under just about every rock were northern white chitons (*Ischnochiton albus* (Linnaeus, 1767)), northern red chitons (*Tonicella rubra* (Linnaeus, 1767)), and mottled red chitons (*Tonicella marmorea* (Fabricus, 1780)). I had never found any of these species live before. The next delight was finding a live Linné's puncturella (*Puncturella noachina* (Linnaeus, 1771)). Finding this generally rare (in New England) species live for the first time was a pure joy.

The water moves fast in these Bay of Fundy-influenced areas so our lowest of low tide collecting time was fairly brief. Just before the rocks got a bit too deep for us to turn over without swimming, Brian noticed a shiny white gastropod that turned out to be a rosy northern dove shell (*Astyris rosacea* (Gould, 1839)). Not only had neither of us collected the species before (let alone live and in excellent condition), but we had never heard of this species inhabiting anything resembling shallow water. We thought it strictly a deep water species in New England. As the tide rushed in, we left Eastport on yet another serious high.

**Stops I & J:** We were now faced with the question of what to do during the high tide. Certain things such as eating were obvious enough, but what about the truly important stuff, ... more shell collecting?! Again, we pondered the possibility of shell piles, but no one we asked had any suggestions. We agreed we should scope out local piers for both floating docks and lobster traps that the high tide would not affect. In the case of the former, we managed to find more bushy-backed nudibranchs among the leafy seaweed. The lobster traps were few, but I found a couple of New England neptunes (*Neptunea decemcostata* (Say, 1826)) for my efforts.

After deciding we had seen enough piers, we headed back for our motel. We made a quick stop at the Orange River along the way to see what freshwater mollusks might turn up. I did a little sifting at the water's edge and turned up a fair amount of fun stuff, such as five different ram's horn species, four different fingernail clam species, and the true valve snail (*Valvata sincera* Say, 1824).

**Stop H:** All of these daytime efforts were ultimately just setting us up for the real attraction, the evening minus tide. Brian and I were delighted to have company during our evening effort. Brian's 4th grade teacher, Ruth MacKechnie, and her friend and biologist, Ellen Johnson, joined us. The four of us decided to try our luck in Cobscook's Bay in the town of Pembroke.

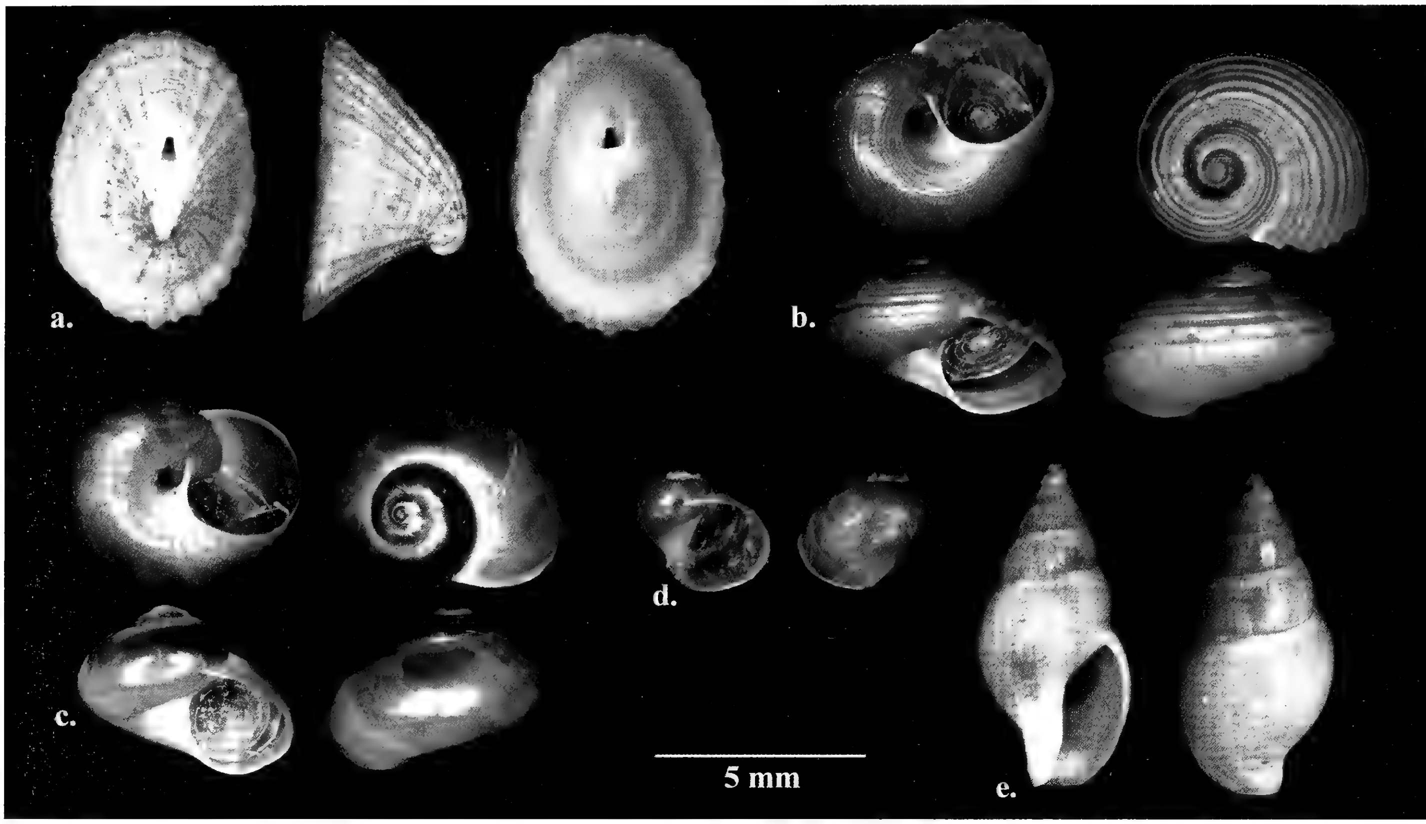
We first tried a little beach at the end of Hershey Neck Road. Although we saw some impressive sights, such as a bright blue and red northern star (*Asterias vulgaris* (Verrill, 1866)) that was a good 12 inches wide, the spot lacked much in the way of our actual quarry, mollusks. We moved on.

After twisting and turning through some winding local roads, we finally took a chance on the beach at the end of Leighton Neck Road. Here we found a nice shallow area of mud and sand mixed with abundant rocks. It seemed inviting and it turned out to be a fine choice. Again, the three chiton species seen in Eastport were abundant. Almost no rock was turned that did not have multiple chitons clinging to it. This area was also excellent for the striate top shell (*Margarites striatus* (Leach, 1819)). Although not large, the bright pinkish-red species stood out against the drab gray rocks. After finding fossil truncate soft-shelled clams in West Quoddy, it was fun to find some modern living examples as well. The same was true for the exceptionally large Arctic saxicaves (*Hiatella arctica* (Linnaeus, 1767)) that we found. On the non-mollusk end, we found some nice large orange-footed sea cucumbers (*Cucumaria frondosa* (Gunnerus, 1767)).

As darkness aapproached we called it a day and celebrated with lobster rolls at the Crossroads Restaurant (conveniently connected to our motel). After dinner, Brian (the smart one) headed straight to bed. I stayed up cleaning and marveling at the day's finds. Who needs sleep when the collecting is good?!

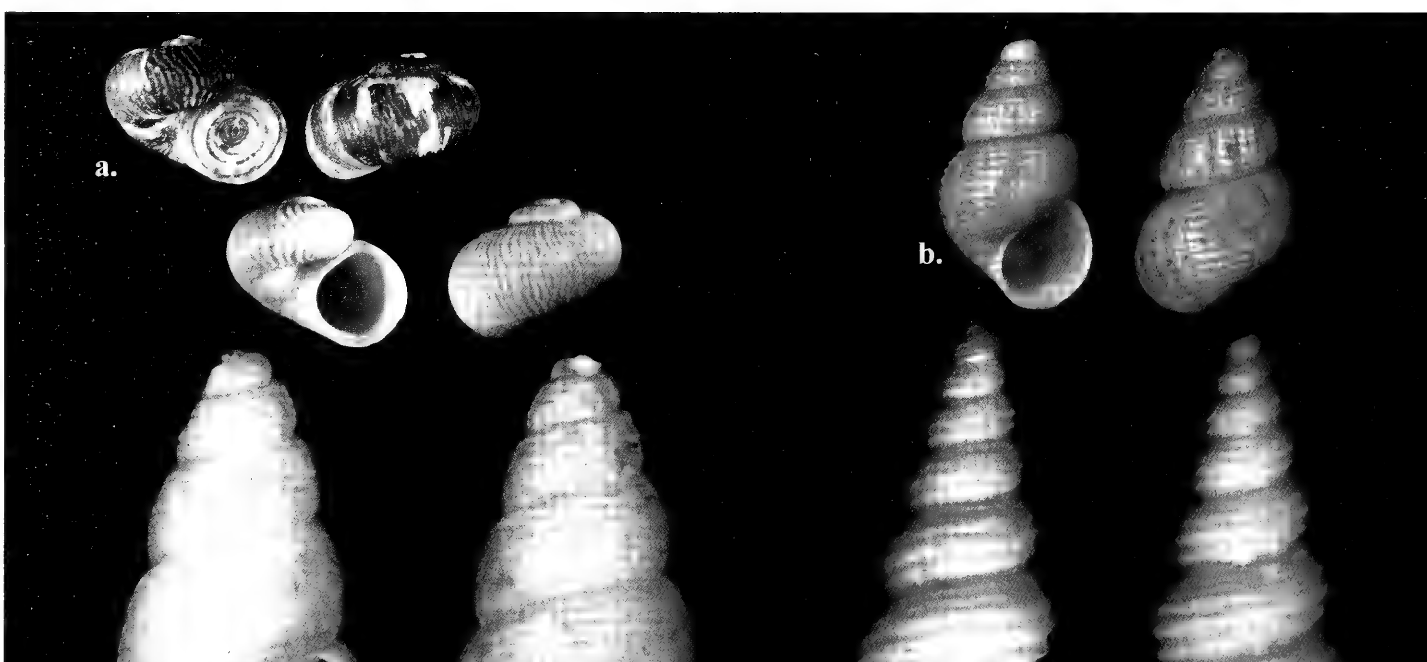
**SUNDAY, AUGUST 21st:** We rose at the crack of dawn once again and decided that the Cobscook Bay locality we visited the night before deserved a second look. This time around, I focused mostly on sieving sediment for drift. This sediment was concentrated around and between the rocks and was silty sand mixed with broken shells and urchin spines (no surprise to find the spines as the live green urchins were abundant at this beach). Even before I took some sifted bounty home to dry and peruse more carefully, I noticed some pleasing species. Nut clams were in abundance, mostly delphinula nut clams (*Nucula delphinodonta* Mighels & Adams, 1842), but a few Atlantic nut clams (*Nucula proxima* Say, 1822) also turned up. I also spied minute bubble shells that turned out to be Arctic barrel bubbles (*Retusa obtusa* (Montagu, 1803)), a new species for my collection. Another new species for the collection (as well as for the shallow water species list) was the flexuose cleft clam (*Thyasira flexuosa* (Montagu, 1803)).

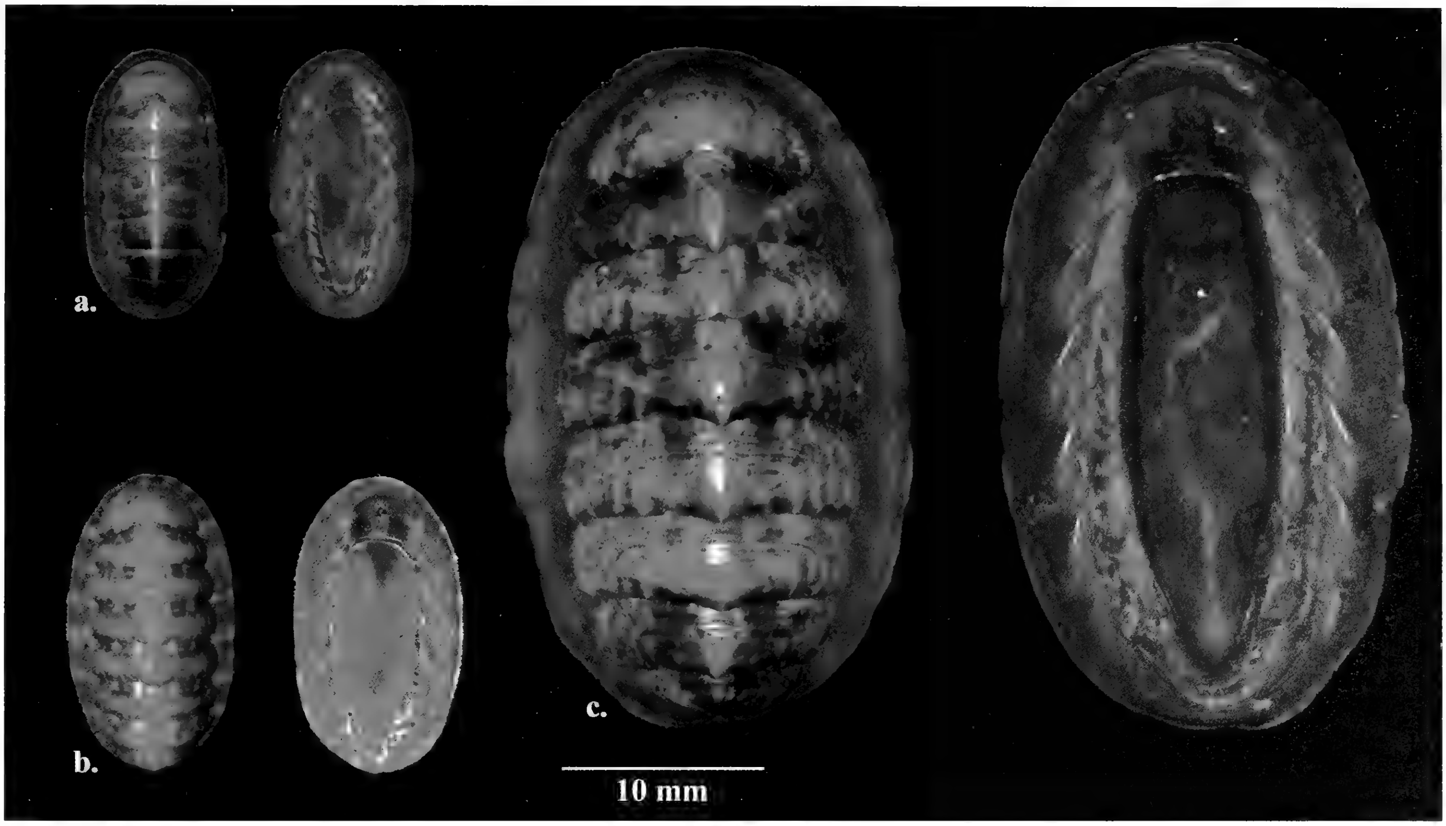
We left for home feeling very good about the three-day effort. The only thing left was for both of us to sift through our collected Pembroke sediments. This turned out to be quite a worthwhile endeavor and we added over 20 species to our weekend collecting total. More importantly, we added multiple species to our shallow water mollusk list. The highlights included the needle turret shell (*Turritellopsis stimpsoni* Dall, 1919), Mighels's cingula (*Onoba mighelsii* (Stimpson, 1851)), costulate moelleria (*Moelleria costulata (*Moller, 1842)), and white menestho (*Menestho albula* (Fabricius, 1780)). All in all, the trip was as rewarding as it was fun. And I will certainly be returning to try my luck again!



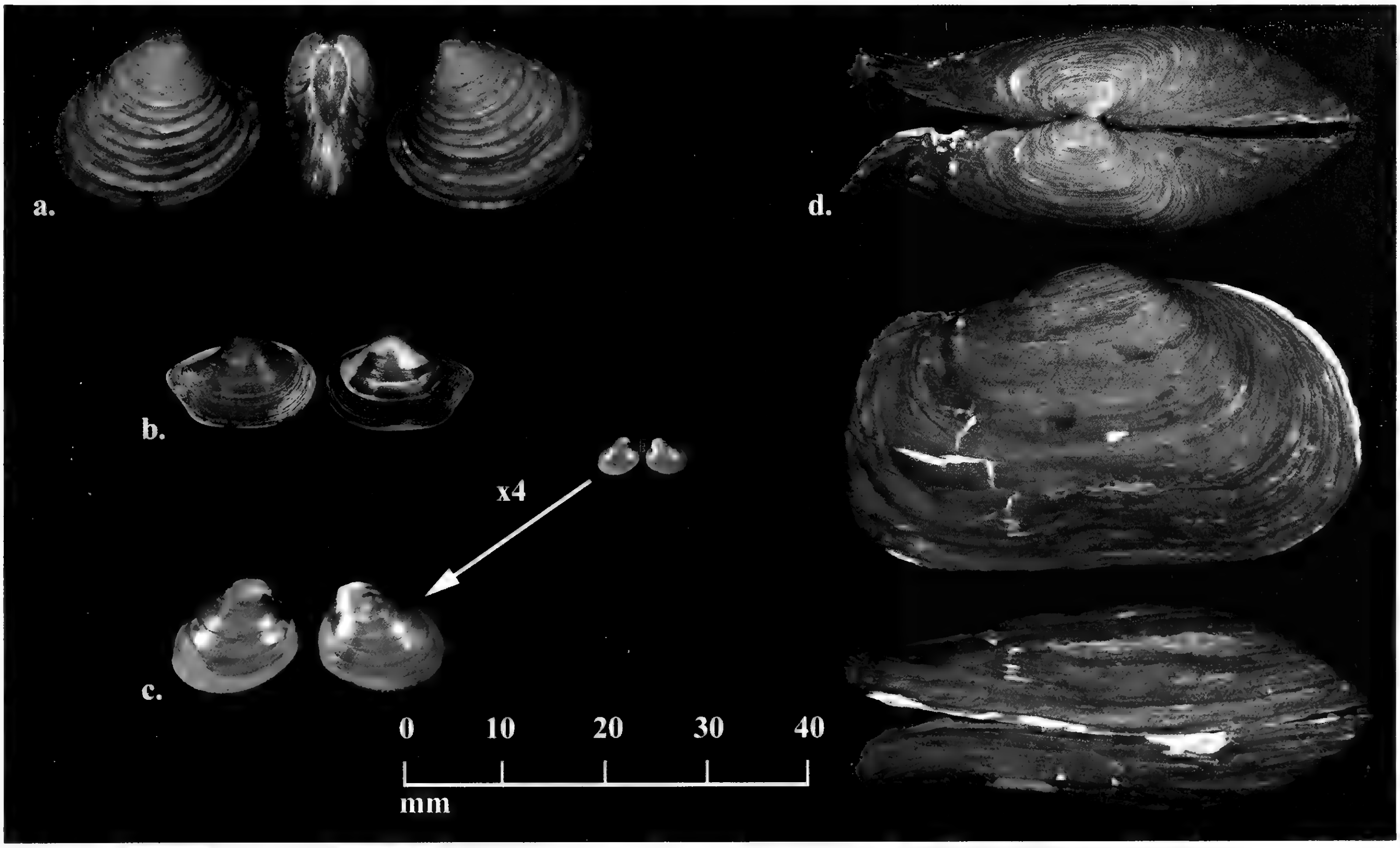

Above: a. *Puncturella noachina* (Linnaeus, 1771), Eastport; b. *Margarites striatus* (Leach, 1819), Eastport & Pembroke; c. *Margarites helicinus* (Phipps, 1774), West Quoddy, Eastport, & Pembroke; d. *Lacuna pallidula* (da Costa, 1778), West Quoddy; e. *Astyris rosacea* (Gould, 1840), Eastport & Pembroke.

Below: a. *Moelleria costulata* (Moller, 1842), Eastport & Pembroke; b. *Onoba mighelsii* (Stimpson, 1851), Pembroke; c. *Menestho albula* (Fabricius, 1780), Pembroke; d. *Turritellopsis stimpsoni* Dall, 1919, Pembroke.






Above: a. *Ischnochiton albus* (Linnaeus, 1767), Eastport & Pembroke; b. *Tonicella rubra* (Linnaeus, 1767), Eastport & Pembroke; c. *Tonicella marmorea* (Fabricus, 1780), Pembroke.
Below: a. *Astarte undata* Gould, 1841, West Quoddy & Pembroke; b. *Portlandia arctica* (J.E. Gray, 1824), Whiting & West Quoddy; c. *Nucula delphinodonta* Mighels & Adams, 1842, Pembroke; d. *Mya truncata* Linnaeus, 1758, West Quoddy, Eastport, & Pembroke.



# Full list of mollusks with specific locality information, Downeast Maine, 8/19-21/2005

| | |
|---|---|
| A | On beach and clay outcrops, NE end, Holmes Bay, near Looks Gourmet Food Co., Whiting (8/19) |
| B | Eastern edge of Little Machias Bay, near river mouth, Cutler (8/19) |
| C | Under floating dock, Fitzhenry Pier, S. side of Destiny Bay (off Destiny Bay Road), Cutler (8/19) |
| D | Muddy flats/clay outcrops across from Carrying Place Bog, West Quoddy (8/19,8/20) |
| E | Rocks exposed at low tide, Quoddy Head State Park, West Quoddy (8/19) |
| F | Harbor rocks exposed at low tide around pier just north of Canadian border entrance, Lubec (8/19) |
| G | Rocks exposed at low tide in cove for the Eastport ferry to Deer Island, Eastport (8/20) |
| H | Rocks exposed at low tide (and sieved from muddy/sand/gravel near rocks), Schooner Cove at end of Leighton Neck Road, in Cobscook Bay, Pembroke (8/20, 8/21) |
| I | Under floating pier on kelp and sea lettuce and on dock in lobster traps, N. edge of Little River, off Route 191, Cutler (8/20) |
| J | In sediment/grasses on edge of Orange River, close to dam, off Route 1, Pembroke (8/20) |
| K | On wood stairway leading up from cove a bit North of ferry to Deer Island, Eastport (8/20) |
| * | Found live at this site |
| *** | Most likely present due to the dumping of imported southern clams on this beach by Looks Gourmet Food |

**GASTROPODS:**

| | | | |
|---|---|---|---|
| 1 | *Puncturella noachina* (Linnaeus, 1771) | Linné's Puncturella | G* |
| 2 | *Tectura testudinalis* (Müller, 1776) | Atlantic Plate Limpet | E*,G*,H* |
| 3 | *Margarites striatus* (Leach, 1819) | Striate Margarite | G*,H* |
| 4 | *Margarites helicinus* (Phipps, 1774) | Helicina Margarite | E*,G*,H* |
| 5 | *Moelleria costulata* (Møller, 1842) | Costulate Moelleria | G,H* |
| 6 | *Lacuna vincta* (Montagu, 1803) | Northern Lacuna | E*,G*,H* |
| 7 | *Lacuna pallidula* (da Costa, 1778) | Pale Lacuna | E* |
| 8 | *Littorina littorea* (Linnaeus, 1758) | Common Periwinkle | (ALL)* |
| 9 | *Littorina obtusata* (Linnaeus, 1758) | Northern Smooth Periwinkle | A,E*,G*,H* |
| 10 | *Littorina saxatilis* (Olivi, 1792) | Northern Rough Periwinkle | B*,D*,E*,G*,H* |
| 11 | *Onoba aculeus* (Gould, 1841) | Pointed Cingula | E,G,H* |
| 12 | *Onoba exarata* (Stimpson, 1851) | Woven Cingula | H |
| 13 | *Onoba mighelsii* (Stimpson, 1851) | Mighels's Cingula | H |
| 14 | *Alvania pseudoareolata* Warén, 1974 | Ribbed Alvania | H |
| 15 | *Frigidoalvania brychia* (A. E. Verrill, 1884) | Jan Mayen's Alvania | H |
| 16 | *Menestho albula* (Fabricius, 1780) | White Menestho | H |
| 17 | *Skeneopsis planorbis* (Fabricius, 1780) | Flat-coiled Skeneopsis | H |
| 18 | *Turritellopsis stimpsoni* (Dall, 1919) | Needle Turret-shell | H |
| 19 | *Epitonium greenlandicum* (G. Perry, 1811) | Greenland Wentletrap | H |
| 20 | *Crucibulum striatum* Say, 1826 | Striate Cup-and-Saucer | H |
| 21 | *Crepidula fornicata* (Linnaeus, 1758) | Common Atlantic Slipper-shell | A,H* |
| 22 | *Euspira heros* (Say, 1822) | Northern Moon-shell | A,H* |
| 23 | *Euspira triseriata* (Say, 1826) | Spotted Northern Moon-shell | H* |
| 24 | *Nucella lapillus* (Linnaeus, 1758) | Atlantic Dogwinkle | A,E*,F,G*,H* |
| 25 | *Astyris rosacea* (Gould, 1840) | Rosy Northern Dove-shell | G*,H |
| 26 | *Buccinum undatum* Linnaeus, 1758 | Common Northern Buccinum | A,B,E*,F,G*,H* |
| 27 | *Colus stimpsoni* (Mörch, 1867) | Stimpson's Colus | G,H |
| 28 | *Colus pygmaeus* (Gould, 1841) | Pygmy Colus | G |
| 29 | *Neptunea decemcostata* (Say, 1826) | New England Neptune | C,D,F,G,H*, I |
| 30 | *Liostomia eburnea* (Stimpson, 1851) | Ivory Liostomia | H |

| | | | |
|---|---|---|---|
| 31 | *Propebela harpularia* (Couthouy, 1838) | Harp Lora | H |
| 32 | *Oenopota cancellata* (Mighels & Adams, 1842) | Cancellate Lora | H |
| 33 | *Curtitoma violacea* (Mighels & Adams, 1842) | Two-corded Lora | H |
| 34 | *Retusa obtusa* (Montagu, 1803) | Arctic Barrel-bubble | H* |
| | | | |
| | | | |
| **CHITONS:** | | | |
| | | | |
| 35 | *Ischnochiton albus* (Linnaeus, 1767) | White Northern Chiton | G*,H* |
| 36 | *Tonicella rubra* (Linnaeus, 1767) | Red Northern Chiton | G*,H* |
| 37 | *Tonicella marmorea* (Fabricus, 1780) | Mottled Red Chiton | G*H* |
| | | | |
| **BIVALVES:** | | | |
| | | | |
| 38 | *Nucula proxima* Say, 1822 | Atlantic Nut Clam | H* |
| 39 | *Nucula delphinodonta* Mighels & Adams, 1842 | Delphinula Nut Clam | H* |
| 40 | *Nucula bellottii* A. Adams, 1856 | Belloti Nutclam | A,D |
| 41 | *Nuculana pernula* (Müller, 1779) | Müller's Nut Clam | A |
| 42 | *Nuculana minuta* (O. F. Müller, 1776) | Minute Nut Clam | D |
| 43 | *Portlandia arctica* (J. E. Gray, 1824) | Arctic Yoldia | A,D |
| 44 | *Mytilus edulis* Linnaeus, 1758 | Blue Mussel | A,B,D,E,F,G,H-all* |
| 45 | *Crenella glandula* (Totten, 1834) | Glandular Crenella | G,H* |
| 46 | *Musculus discors* (Linnaeus, 1767) | Discord Musculus | G,H |
| 47 | *Musculus glacialis* (Leche, 1883) | Corrugated Musculus | H* |
| 48 | *Modiolus modiolus* (Linnaeus, 1758) | Northern Horse Mussel | B,E*,G*,H* |
| 49 | *Chlamys islandicus* (Müller, 1776) | Iceland Scallop | D |
| 50 | *Placopecten magellanicus* (Gmelin, 1791) | Atlantic Deepsea Scallop | B,F,G,H |
| 51 | *Anomia squamula* Linnaeus, 1758 | Prickly Jingle Shell | C,E*,H* |
| 52 | *Crassostrea virginica* (Gmelin, 1791) | Eastern Oyster | A |
| 53 | *Thyasira flexuosa* (Montagu, 1803) | Flexuose Cleft Clam | H |
| 54 | *Cyclocardia borealis* (Conrad, 1831) | Northern Cardita | F,G,H* |
| 55 | *Cyclocardia novangliae* (E. S. Morse, 1869) | Wide Northern Cardita | H* |
| 56 | *Astarte borealis* (Schumacher, 1817) | Boreal Astarte | D |
| 57 | *Astarte undata* Gould, 1841 | Waved Astarte | D,H* |
| 58 | *Astarte crenata* (J. E. Gray, 1824) | Lentil Astarte | A,G |
| 59 | *Astarte elliptica* (T. Brown, 1827) | Elliptical Astarte | D,H |
| 60 | *Astarte montagui* (Dillwyn, 1817) | Montagu's Astarte | D |
| 61 | *Cerastoderma pinnulatum* (Conrad, 1831) | Northern Dwarf Cockle | D,G,H* |
| 62 | *Serripes groenlandicus* (Mohr, 1786) | Greenland Cockle | A,D |
| 63 | *Spisula solidissima* (Dillwyn, 1817) | Atlantic Surf Clam | A |
| 64 | *Mactromeris polynyma* (Stimpson, 1860) | Stimpson's Surf Clam | D |
| 65 | *Mesodesma arctatum* (Conrad, 1831) | Arctic Wedge Clam | D |
| 66 | *Rangia cuneata* (G.B. Sowerby, 1831) | Common Rangia | A*** |
| 67 | *Ensis directus* Conrad, 1843 | Atlantic Jackknife Clam | H |
| 68 | *Macoma calcarea* (Gmelin, 1791) | Chalky Macoma | A,D |
| 69 | *Macoma balthica* (Linnaeus, 1758) | Balthica Macoma | A,D,H |
| 70 | *Tagelus plebeius* (Lightfoot, 1786) | Stout Tagelus | A*** |
| 71 | *Arctica islandica* (Linnaeus, 1767) | Ocean Quahog | A,H |
| 72 | *Mercenaria mercenaria* (Linnaeus, 1758) | Northern Quahog | A |
| 73 | *Gemma gemma* (Totten, 1834) | Amethyst Gem Clam | H |
| 74 | *Mya arenaria* Linnaeus, 1758 | Soft-shell Clam | A,B,D,F,G,H* |
| 75 | *Mya truncata* Linnaeus, 1758 | Truncate Soft-shell Clam | D,G,H* |
| 76 | *Hiatella arctica* (Linnaeus, 1767) | Arctic Saxicave | A,D,E,G,H* |
| 77 | *Lyonsia arenosa* (Møller, 1842) | Sanded Lyonsia | G,H |
| 78 | *Thracia septentrionalis* Jeffreys, 1872 | Northern Duckbill | H |
| | | | |

| | | | |
|---|---|---|---|
| **NUDIBRANCHS:** | | | |
| | | | |
| 79 | *Dendronotus frondosus* (Ascanius, 1774) | Bushy-backed Nudibranch | C*,E*,I* |
| 80 | *Coryphella salmanacea* (Couthouy, 1838) | Salmon-gilled Nudibranch | E* |
| 81 | *Onchidoris muricata* (Müller, 1776) | Muricate Dorid | E*,H* |
| 82 | *Acanthodoris pilosa* (Abildgaard, 1789) | Hairy Dorid | E* |
| | | | |
| **BRACHIOPODS:** | | | |
| | | | |
| 83 | *Terebratulina septentrionalis* (Couthouy, 1838) | Northern Lamp Shell | G* |
| | | | |
| **LAND SHELLS:** | | | |
| | | | |
| 84 | *Vertigo ovata* Say, 1822 | Ovate Brown Pupa Snail | J* |
| 85 | *Nesovitrea electrina* (Gould, 1841) | Amber Retinella | J* |
| 86 | *Cionella lubrica* (Müller, 1774) | Apple Seed Snail | G |
| 87 | *Succinea ovalis* Say, 1817 | Oval Amber Snail | K* |
| 88 | *Oxychilus cellarius* (Müller, 1774) | Common Cellar Snail | G |
| | | | |
| **FRESHWATER SHELLS:** | | | |
| | | | |
| 89 | *Gyraulus parvus* (Say, 1817) | Lesser Ram's Horn | J* |
| 90 | *Gyraulus deflectus* (Say 1824) | Deflected Ram's Horn | J* |
| 91 | *Gyraulus hirsutus* (Gould) | Hairy Ram's Horn | J* |
| 92 | *Menetus dilatatus* (Gould, 1841) | Dilated Ram's Horn | J* |
| 93 | *Planorbella campanulata* (Say, 1821) | Bell-Mouthed Ram's Horn | J |
| 94 | *Amnicola limosa* (Say, 1817) | Miry Hydrobia | J* |
| 95 | *Valvata sincera* Say, 1824 | True Valve Snail | J* |
| 96 | *Lymnaea palustris* (Müller,1774) | Swamp Pond Snail | J* |
| 97 | *Physa heterostropha* (Say, 1816) | Common Tadpole Snail | J* |
| 98 | *Aplexa hypnorum* (Linnaeus,1758) | Polished Tadpole Snail | J* |
| 99 | *Campeloma decisum* (Say 1816). | Lesser Mystery Snail | J |
| 100 | Gastropod sp. | | J* |
| 101 | *Sphaerium rhomboideum* (Say, 1822) | Rhomboid Fingernail Clam | J* |
| 102 | *Musculium securis* (Prime, 1852) | Pond Fingernail Clam | J* |
| 103 | *Musculium transversum* (Say, 1829) | Long Fingernail Clam | J* |
| 104 | *Musculium partumeium* (Say, 1822) | Swamp Fingernail Clam | J* |
| 105 | *Elliptio complanata* (Lightfoot, 1786) | Eastern Elliptio | J |

I would like to thank Brian Cassie for editing this piece and Leo Kenney for his tireless work photographing my shells.

**References used for names:**

**Mikkelsen, Paula M.** 2004. Western Atlantic Bivalves, ver. 1. http://peet.amnh.org/Western_Atlantic_Bivalves.html, accessed 2006.
**Rosenburg, G.** 2005. Malacolog Version 4.0.2: Western Atlantic Mollusk Database, http://data.acnatsci.org/wasp/, The Academy of Natural Sciences Philadelphia, accessed 2006.

**Editor's note:** According to Turgeon et al. (1998) both *Lymnaea* "*palustris*" (no. 96, an uncertain name, possibly a composite species) and *Aplexa hypnorum* (no. 98) are European and the names do not apply to specimens from North America. Turgeon et al. use *Stagnicola elodes* (Say, 1821) and *Aplexa elongata* (Say, 1821) respectively.

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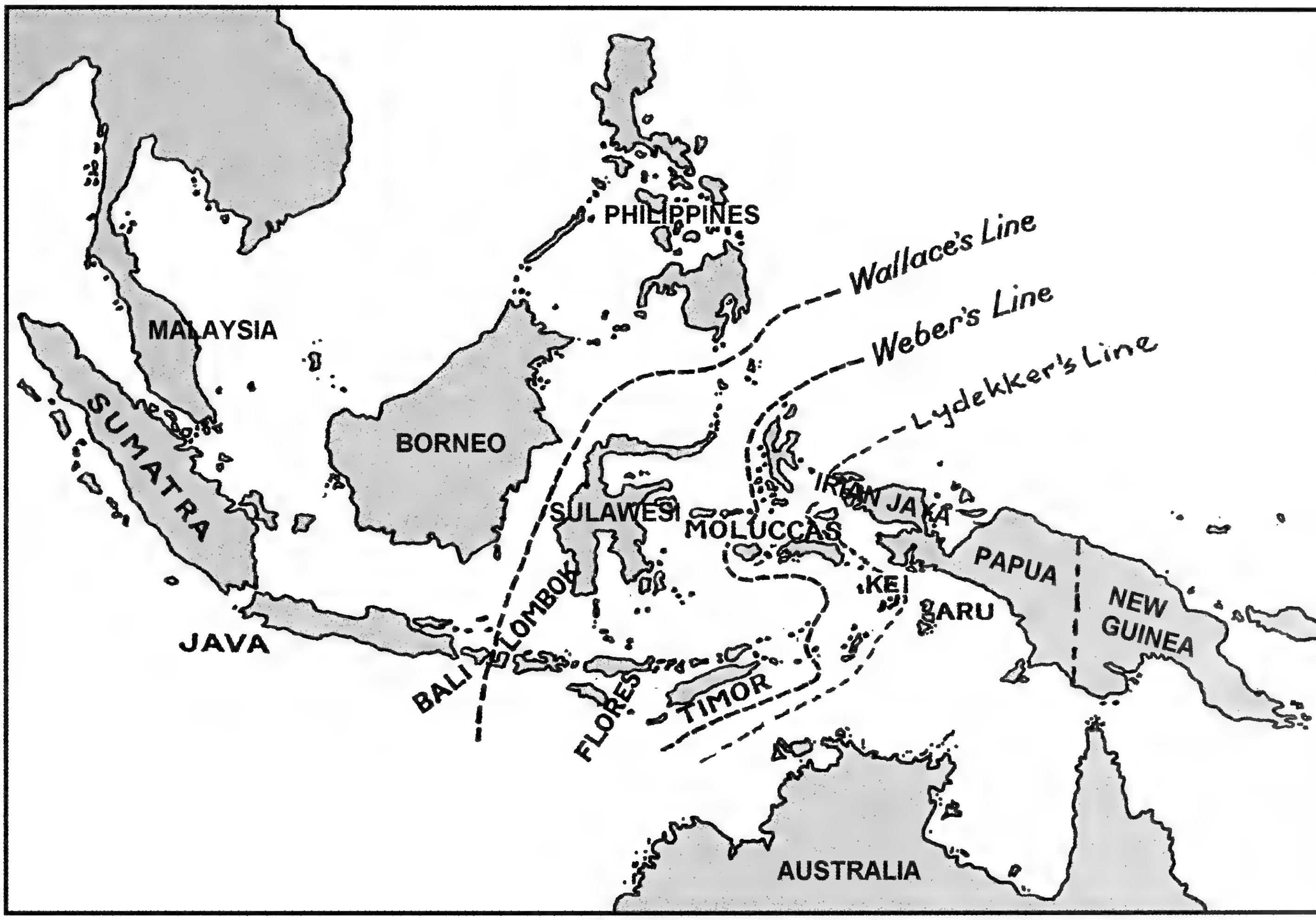
# Mollusks and the Wallace Line

by Zvi Orlin




Alfred Russel Wallace (1823 - 1913), eminent evolutionist and contemporary and colleague of Darwin, noted that the terrestrial fauna of S.E. Asia (known then as the Orient) and the Australian Region were extremely different. During his four-year collecting trip in and around present day Indonesia, and particularly when he traveled between the islands of Bali and Lombok and between Borneo and the Celebes (now Sulawesi), he came to the conclusion that there was a biogeographical division between the two regions. The barrier seemed to affect large mammals, freshwater fish, and birds. In fact, birds seemed to be especially prominent indicators of some sort of barrier. He found Asian pheasants on the island of Bali, but just 25 kilometers away in Lombok, they were absent and instead he found Australasian parrots. Of 55 species of Cyprinidae found on Java, he found only a single fish in this family on Lombok; similarly there were 162 species of Cyprinidae on Borneo, but none on Sulawesi (Van Oosterzee, 1977).

T.H. Huxley later designated this as "Wallace's Line," passing between Bali and Lombok, north between Borneo and Sulawesi, and further northwards between the Philippines and the Sangi and Talaud Islands and the Moluccas (Indonesia). Wallace collected some 125,660 natural history specimens from this area (about 1,000 were new to science), and his observations about the distribution of these specimens led to his acknowledgement as the "Father of Biogeography" (sometimes called zoogeography).

The exact position of Wallace's Line, and even whether or not such a demarcation line exists at all, was debated in the early 20th century. Wallace's Line was placed in at least five different localities by as many different authors. It was placed much further east by Lydekker (1896) and then moved back slightly westwards by Weber (1902) - see map. Other authors made slight adjustments (most in between the original line and that described by Weber), but all seemed to agree there was some sort of break in species between the two areas. The area that contains these various lines is known as Wallacea, a transition zone between the two regions. Many animals (e.g. bats and insects) did not seem to fit into this simplified division. Wallace's Line was primarily determined by terrestrial species, and without becoming involved in the debate on the position or validity of Wallace's Line, I decided to investigate the situation in relation to marine mollusks. Does Wallace's Line separate different species of marine mollusks?

Terrestrial regions in this area are typically separated by expanses of ocean. One would think at the outset that the marine environment with its contiguous oceans only partially separated by various land masses (in this case by islands and archipelagos) and its wide-ranging currents should be useful in the dispersal of marine larvae (and presumably the occasional adult specimen) and thus more conducive overall to the distribution of marine species than would be the case with terrestrial species in the same area. In order to survey the question thoroughly, I needed up-to-date checklists of the mollusks of Indonesia, the Philippines, and Australia. Sadly such checklists are presently unavailable, so I decided to make a preliminary check with the literature available in my personal library.

I visited Indonesia in 1999 and was enamored with this country, bordering the Indian and Pacific Oceans and blessed with a bounty of beautiful molluscan species. So when a new book on the mollusks of Indonesia was published, I immediately purchased a copy. Thus I selected *Recent and Fossil Indonesian Shells* by Bunjamin Dharma, 2005, as my reference for Indonesian species. For Australian species, I used Barry Wilson's two-volume Australian Marine Shells (1993-1994); K. Lamprell and T. Whitehead's Bivalves of Australia, vol. 1 (1992); and K. Lamprell and J. Healy's Bivalves of Australia, vol. 2 (1998). For the Philippine species I used *Shells of the Philippines* by F. J. Springsteen and F. M. Leobrera, 1986. The Australian books only dealt with prosobranch gastropods and bivalves, so I was limited in my comparisons to these, omitting the other groups. Similarly, microshells were unevenly covered in these references and were also omitted from my survey. In my comparisons I dealt with species but not subspecies. My survey related to the Lydekker line, west of which I regarded as Indonesia, and east of which I regarded as belonging to Australian region. Thus any shells from the Aru Islands or Irian Jaya were not included in my Indonesian list for comparisons.

The results of my survey show that in Indonesia, of the 1,440 species dealt with in Dharma's book, 842 species are also found in Australia, amounting to 60.5% commonality. These figures are for the groups surveyed, and are not differentiated by class or family. The percentage for most families, however, is about the same as the average percentage (above) for the entire dataset. Some families that varied from this average include: of 79 Mitridae species in the Indonesian book, 83% are also found in Australia; of 45 species of Terebridae, 77% are also found in Australia; of 50 species of Veneridae, 68% are also Australian; whereas of 19 species of Littorinidae, only 42% are also Australian; and of 16 species of Cancellariidae, only 31% are Australian.

Comparing Philippine and Australian faunas was a bit more problematic as the Australian books were more recently published and reflected many changes of genus and species names. In the Philippine book, of 1,433 species (bivalves and gastropods excluding Opisthobranchia), 725 species were also found in Australia, amounting to 50.6%. As the Philippines are further removed from Australia than Indonesia, this is not surprising.

So what conclusions can I reach from my limited survey? Obviously, marine mollusks are not divided on either side of Wallace's Line to the extent of the terrestrial species that so captivated Wallace. A commonality of 50% to 60% is, however, a far cry from 100% commonality. While I could find no hard line dividing marine mollusks, there is certainly a difference between Australian species and both Philippine and Indonesian species.

As a check on this division I also compared Indonesian and Philippine mollusk totals. If marine mollusks are in fact separated along the Wallace Line (the 50%-60% numbers), then the numbers between Indonesia and the Philippines ought to be higher, showing more commonality between two adjacent areas not separated by the Wallace Line. In fact, I found that of the 1,440 species in the Philippine book, only 835 species were also found in Indonesia, a commonality of 58%. This is very similar to the numbers found across the Wallace Line and indicates marine mollusks seem to be relatively unaffected (at least using my simple comparisons) by the mechanisms that effect land animals.

Wallace attributed the differences on either side of his line to past geologic events. He believed the Indonesia side, or west of his line, was originally a single continent that sunk due to volcanic activity, leaving mountain tops as the various islands in a shallow sea (the Sundan Shelf), but divided from the islands to the east by deeper waters (Carlquist, 1965). In fact, this area is still part of the Asian continent and the Sundan Shelf marks the edge of the Asian tectonic plate. East of Wallace's Line is another tectonic plate with Australia and New Guinea as the primary landmasses. These plates were once separated by thousands of miles, but have moved together over the last 100 million years. Therefore life on the two plates developed separately and it is only recently (in a geologic sense of fewer than 50 million years) that the plates have moved together, allowing for some species to spread from one plate to the other.

During my visit I often found more diversity of species in the Indian Ocean on the southern side of Indonesia, as contrasted to the northern Pacific Ocean side. This would seem to indicate there is a north-south division in mollusks rather than Wallace's east-west division. In any case, I believe the importance of the Wallace Line is that it enhanced interest in the biogeography of the region and the world. Wallace is rightly regarded as the "Father of Biogeography".

**Literature:**

**Carlquist, S.** 1965. Island Life, The Natural History Press, Garden City, NY, pp. 451.

**Dharma, B.** 2005. Recent and Fossil Indonesian Shells, ConchBooks, Hackenheim, Germany, pp. 424.

**Lamprell, K. & Healy, J.** 1998. Bivalves of Australia (vol. 2), Backhuys Publishers, Leiden, Australia, pp. 288.

**Lamprell, K. & Whitehead, T.** 1992. Bivalves of Australia (vol. 1), Crawford House Press, Pty., Ltd., Bathurst, Australia, pp. 182.

**Springsteen, F.J. & Leobrera, F.M.** 1986. Shells of the Philippines, Carfel Seashell Museum, Manila, Philippines, 377.

**Van Oosterzee, P.** 1997. Where Worlds Collide: The Wallace Line, Cornell University Press, Ithaca, New York, pp. 234.

**Wallace, A. R.** 1880. Island Life (repub. 1998), Prometheus Books, Amherst, New York, pp. 522.

**Wallace, A. R.** 1890. The Malay Archipelago (repub, 2000), Periplus Ltd., Hong Kong, pp. 517.

**Wilson, B.** 1993-1994. Australian Marine Shells (2 vol.), Odyssey Publishing, Kallaroo, Western Australia, pp. 777.

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# CYPRAEIDAE: *LYNCINA CARNEOLA* (LINNAEUS, 1758) FORM *LEVIATHAN*

by Eduard Heiman

Recent intraspecific variation in *Lyncina carneola* (Linnaeus, 1758) is studied conchologically using 589 shells. The taxonomic identity of four subspecies is confirmed: *L. carneola carneola* (Linnaeus, 1758) from the Eastern Indian Ocean and Western and Central Pacific Ocean (Fig. 1), *L. carneola crassa* (Gmelin, 1791) from the Gulf of Aqaba and the Red Sea (Fig. 2), *L. carneola sowerbyi* (Anton, 1839) from East Africa (Fig. 3), and *L. carneola propinqua* (Garrett, 1879) from Polynesia (Fig. 4). At the same time a question arises: how to treat the outstandingly large shells that are sporadically found in populations of *L. carneola*, as depicted by G.B. Sowerby II (1870) (Fig. 5). For the purposes of this paper I will refer to these as *leviathan*-like shells.

Prior to 1937, some authors considered outstandingly large shells found in some populations of *Lycina carneola* (Linnaeus, 1758) to be a form (or variety) of that species, but in that year, in a work dedicated to the cowries of the Bismark Archipelago, Schilder & Schilder described them as its subspecies, *Cypraea (Lyncina) carneola leviathan.* In the authors' opinion, it differed from shells of *L. carneola* by a huge size, marginate anterior extremity, wide aperture, shallow fossula, light flesh-colored dorsum encircled by only a light-brown ring, and slightly marmorate sides (Fig. 6). The lowest limit for adult shell size of this subspecies was not determined. It was believed to inhabit the Hawaiian Islands, Fiji, Polynesia, and perhaps New Caledonia.

In the Prodrome (Schilder & Schilder, 1938), *Lyncina leviathan* is mentioned as a valid species with the formula 74.58.26.21 and a range of distribution as mentioned above. One can estimate an approximate range of the shell length from this formula supposing a standard deviation of about 10% or 7.4mm. The result is $74 \pm (3 \times 7.4) = 52\text{-}96$mm for a range of shell length. In "Ph. Dautzenberg's collection of Cypraeidae" (Schilder & Schilder, 1952) they treat *L. leviathan* as a full species, but in Schilder & Schilder (1971) *L. leviathan* is again listed as a subspecies, *L. carneola leviathan.*

This situation has led to confusion because in last decades more large *leviathan*-like shells have become available from different places within the range of distribution of *L. carneola. Leviathan*-like shells have been found in the Maldive Islands, Vietnam, Indonesia, the Philippines, Australia, Guam, Japan, and Polynesia, and each such large shell from these areas was diagnosed as *L. carneola leviathan* or *L. leviathan* (Fig. 6).

When *leviathan*-like shells were obtained from the Western Indian Ocean, they were described as *Lyncina titan* Schilder & Schilder (1962), a valid species from East Africa. The description is based mostly upon anatomical traits: differences between males and females, the difference in the genitalia as compared with other populations of *L. carneola*, and peculiarities of the radula, all based on a large sample of specimens. Later this name was also used for *leviathan*-like shells found in the Gulf of Aqaba. Finally, *L. titan* was listed as a subspecies, *L. carneola titan*, in Schilder & Schilder (1971) apparently instead of what I consider to be the senior synonym, *L. carneola sowerbyi* from East Africa.

C.N. Cate (1968) described a new subspecies *L. leviathan gedlingae* from Western Australia where it shares habitat with *L. carneola carneola.* The holotype is 80.6mm in length. *L. leviathan gedlingae* was for some reason treated as a synonym or ignored by subsequent authors, unlike the other taxa mentioned above.

C.M. Burgess (1985), considering the animals' anatomy, recognized *L. leviathan* as a valid species endemic to the Hawaiian Islands. Burgess indicated the range of shell length of *L. leviathan* as 35-130mm, treated *L. titan* as a synonym of *L. carneola*, and mentioned three species inhabiting the Hawaiian Islands: *C. carneola*, *C. propinqua* (Garrett, 1879), and *C. leviathan.*

Lorenz & Hubert (2000) discussed *L. carneola* with subspecies *L. carneola propinqua*, and *L. leviathan* with subspecies *L. leviathan titan* and *L. leviathan bouteti.* Lorenz (2002) listed *L. carneola* as a monotypic species and *L. leviathan* with subspecies *L. leviathan titan.*

For all of that, what is the taxonomic identity of *leviathan*-like shells from a point of view of a conchologist?

a) It is clear today that *leviathan*-like shells are not restricted to the Hawaiian Islands and can be found in the Indo-Pacific from the Gulf of Aqaba in the northwest to Polynesia in the east.

b) Some authors still treat these as a valid species, *L. leviathan*, but I do not know of any report of finding a population of that taxon living separately from *L. carneola.* In all modern books on regional mollusk faunas known to me, it is always mentioned together with *L. carneola.* If one where to find such a population it would be possible to determine at least the lowest limit of the adult shell size of the taxon. In "Diagnosing cowry species" (2004) I made an attempt to separate *L. carneola crassa* (Gmelin, 1791) from East Sinai and the sympatric *L. titan* by shell size using the results of measurements based on certain assumptions. This is not, however, the same as examining shells of an allopatric cowry population *in situ.* The actual conchological gap between *leviathan*-like shells in the Indo-Pacific and those of *L. carneola* is not yet established.

c) If *L. leviathan* is endemic to the Hawaiian Islands, then the existence of *leviathan*-like shells throughout the Indo-Pacific, in the Philippines, Australia, East Africa, etc., conchologically indistinguishable except by their larger size, must represent numerous additional undescribed endemic (sub)species

d) Some authors treat the *leviathan*-like shells as subspecies of *L. carneola.* The problem is that subspecies of *L. carneola* are already described from all those areas where *leviathan*-like shells are sporadically found and two subspecies of the same species cannot co-exist.

e) Mollusks with *leviathan*-like shells never seem to comprise the majority in the area of their co-existence with *L. carneola*. In other words, they do not conform to an important criterion of subspecies.

f) *Leviathan*-like shells in different areas are similar to shells of *L. carneola* subspecies from the same area, sharing species-level conchological traits of shell color, dorsal bands, lilac color around the aperture, etc. They often also share with local shells of *L. carneola* their subspecific characters: *leviathan*-like shells from East Africa and East Sinai may have an oval shape and a spherical or humped profile (Fig. 7). *Leviathan*-like shells from the Maldive Islands and the Philippines may be elongate-oval (Fig. 8-9).

g) Of course, *leviathan*-like shells stand out by their size and can easily be chosen as a distinct group, but this is true for any outstanding shell character: dwarf and rostrated shells; dark-brown, rusted, melanotic, or bluish shells; excessively callused specimens; etc. If shells with such outstanding character traits comprise the majority in a population group, they are generally treated as a subspecies. If not, they are usually treated as a form.

It is possible that diagnosing cowry taxa by comparing shell characters may be sometimes ineffective or even impossible. One can then say that a taxon in question is not separable conchologically. Perhaps this is the case with *leviathan*-like shells.

In the past, species descriptions were sometimes short and insufficient, especially by today's standards. Today it is commonly accepted that the author must point out how a new taxon differs from close relatives and list its main diagnostic characters, habitat, distribution, and other details. In my opinion, this has really not yet been done (or at least not in a thorough fashion) for *leviathan*-like shells. Until this information is obtained, *leviathan*-like shells can only be considered a form of *L. carneola*.

**Literature:**


**Burgess, C. M.** 1985. Burgess' Cowries of the World, Cape Town, Gordon Verhoef, Seacomber Publications, pp. 289.

**Cate, C.N.** 1968. Western Australian cowries, A second, revised, and expanded report, The Veliger 10(3): 212-232.

**Heiman E.L.** 2004. Diagnosing cowry species, Published privately, pp. 160.

**Lorenz F.** 2002. New Worldwide Cowries, ConchBooks, Hackenheim, Germany, pp. 292.

**Lorenz F. & Hubert, A.** 2000. A Guide to Worldwide Cowries, ConchBooks, Hackenheim, Germany, pp. 584.

**Schilder F.A. & Schilder, M.** 1938. Prodrome of a monograph on living Cypraeidae, Proceedings of the Malacological Society of London 23:119-231.

**Schilder M. & Schilder F.A.** 1937. Die Cypraeidae des Bismarckarchipels. Zoologischer Anzeiger 11(97/8):177-194.

**Schilder F.A. & Schilder, M.** 1952. Ph. Dautzenberg's collection of Cypraeidae, Institute Royal des sciences naturelles de Belgique. Bruxelles, pp. 243, 4 Plates.

**Schilder M. & Schilder F.A.** 1971. A catalogue of living and fossil cowries, Institut Royal des sciences naturelles de Belgique, pp. 246.

**Sowerby, G. B. II.** 1870. Thesaurus Conchyoliorum, Vol. IV.



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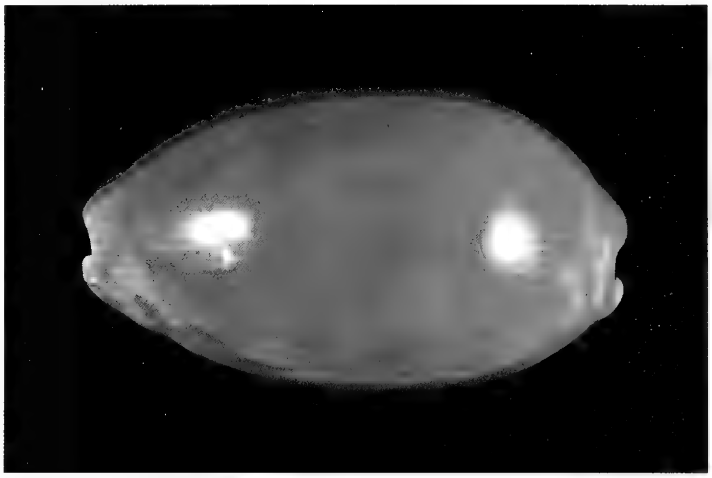

**Fig. 1. *L. carneola carneola* (Linnaeus, 1758), 30mm, Malaysia.**

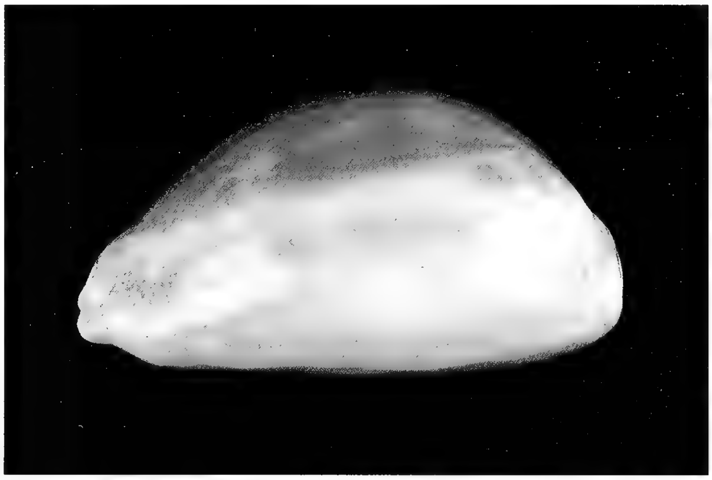

**Fig. 2. *L. carneola crassa* (Gmelin, 1791), 42mm, East Sinai.**

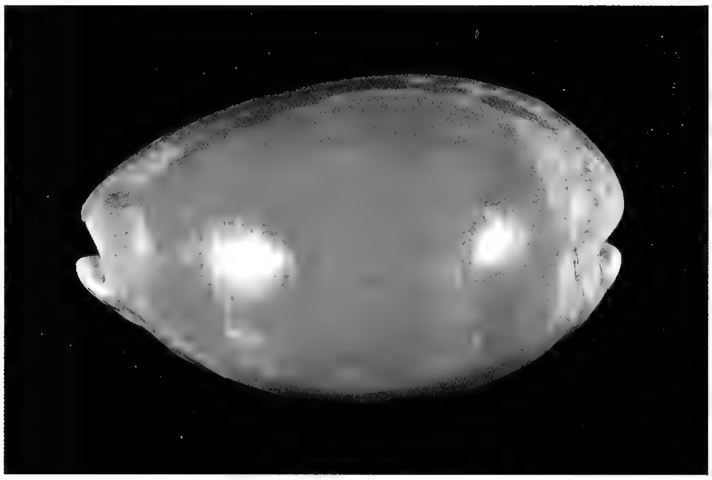

**Fig. 3. *L. carneola sowerbyi* (Anton, 1839), 29mm, Nacala, Mozambique.**

**Fig. 2. *L. carneola crassa* (Gmelin, 1791), 42mm, East Sinai.**

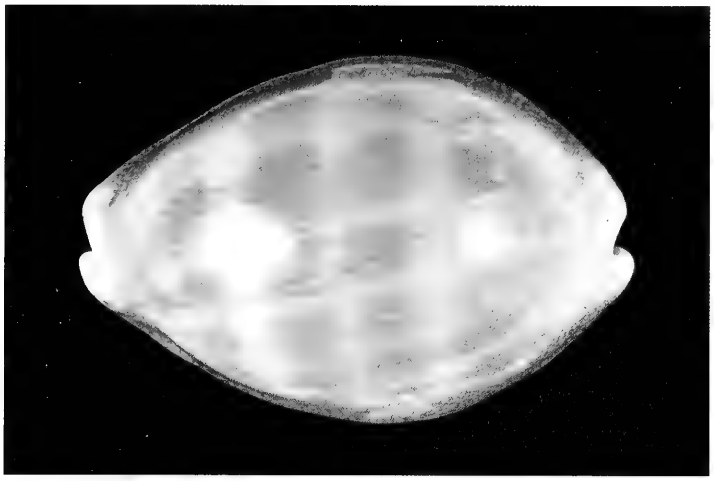

**Fig. 4.** ***L. carneola propinqua*** **(Garrett, 1879), 37mm, Tahiti.**

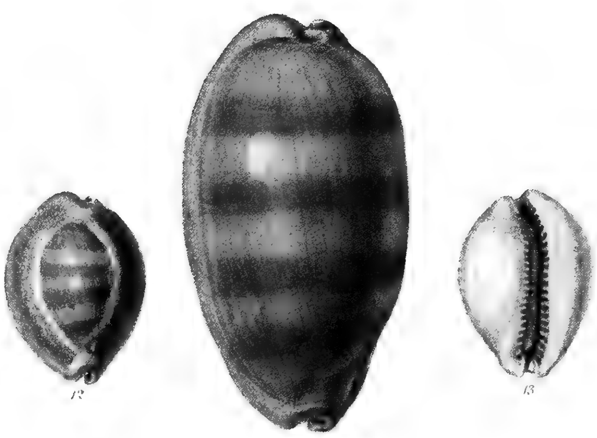

**Fig. 5.** ***L. carneola*** **(Linnaeus, 1758); the image by Sowerby (1870), the huge shell in the middle is** ***leviathan*****-like.**

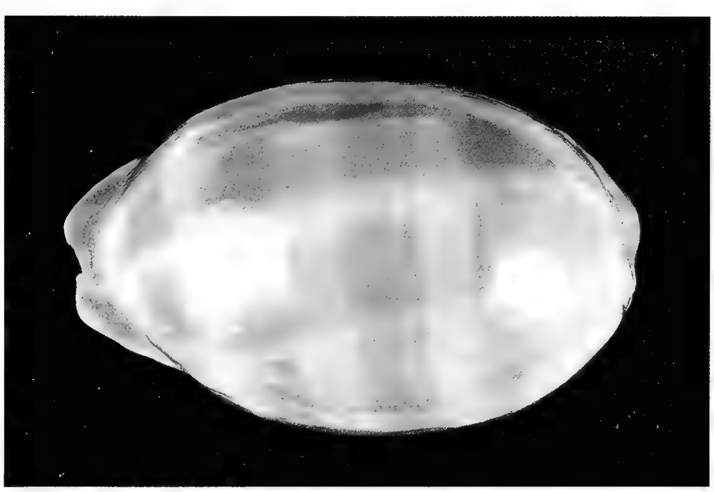

**Fig. 6.** ***L. carneola*** **f.** ***leviathan*****; 82.8mm, the Hawaiian Islands.**

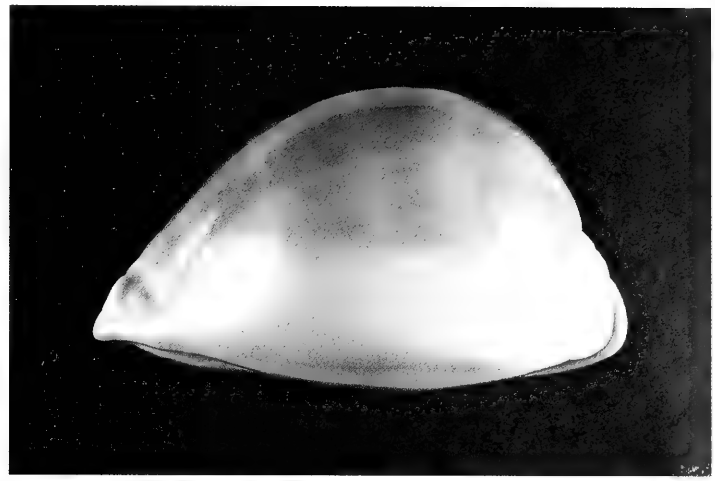

**Fig. 7.** ***L. carneola*** **f.** ***leviathan*****; 70mm, East Sinai.**

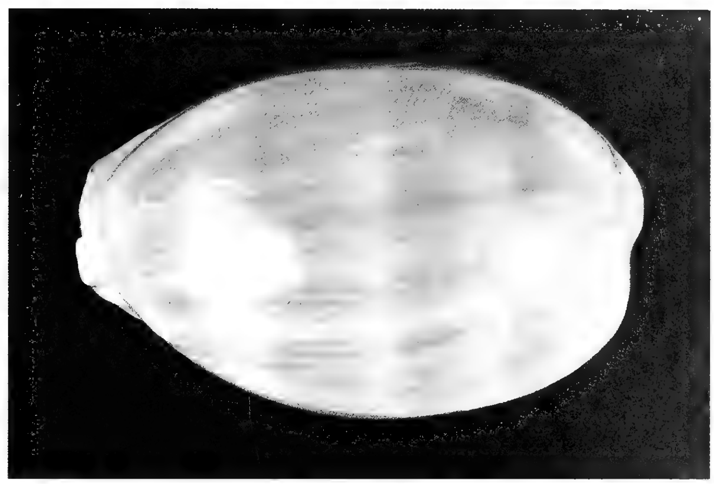

**Fig. 8.** ***L. carneola*** **f.** ***leviathan*****, 83.5mm, the Philippines.**

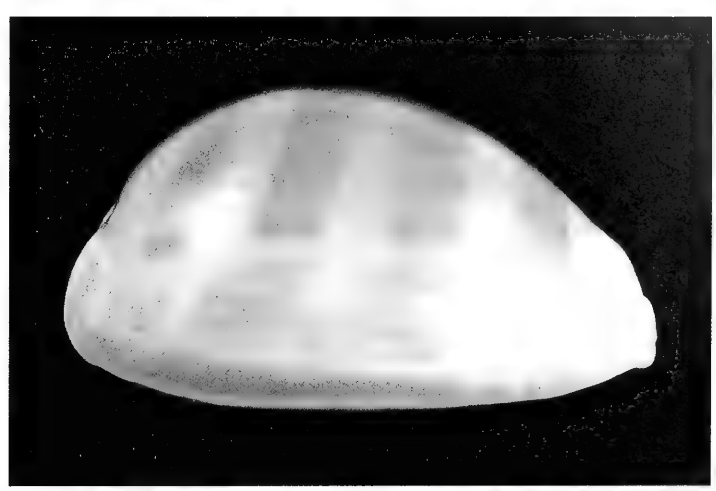

**Fig. 9.** ***L. carneola*** **f.** ***leviathan*****, 66mm, Maldive Islands.**

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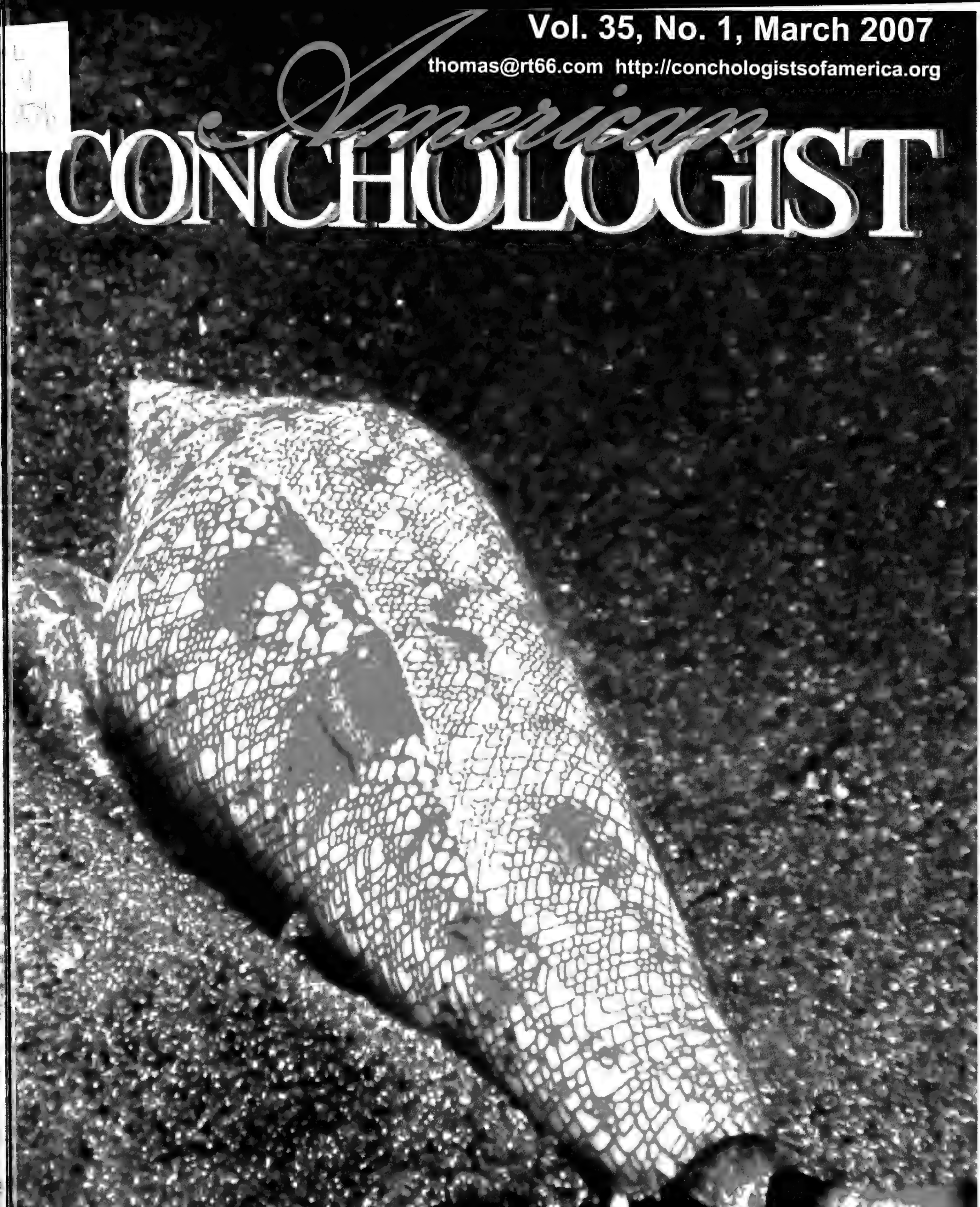

Quarterly Journal of the Conchologists of America

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**Volume 35, No. 1** **March 2006**

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In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***

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**Front cover: *Conus gloriamaris* Chemnitz, 1777, photographed alive by Charles Rawlings in about 60 feet of water. The animal was actively hunting on volcanic sand and mud at night off Balicasag Island in the Philippines. This may be the first publication of a living *Conus gloriamaris*. See the related story on page 25.**

**Back cover: The more common view of *Conus gloriamaris*. In this case four shells ranging from 87 - 128mm. The two larger shells (and darker) are from Samar Island in the Philippines while the two smaller shells are from Balicasag Island where the specimen on the front cover was found. These shells show not only variation in color and pattern, but also general shape (note the differences in relative spire height). Image by T. Eichhorst.**

## Notes From the Editor:

I recently ordered a copy of a book from Germany. When it arrived, what I found in my mailbox was an empty carton and a note from the U.S. Post Office that said, "received without contents." About one week later I received an envelope from the post office that contained pieces of the torn and wrinkled invoice that had originally been inside the carton with the book. This envelope was stamped, "we care." Obviously, someone cared enough to remove and keep my book! To give the post office folks credit, this is an unusual occurrence and could have happened anywhere along my book's international journey. Like many of us, I have sent and received numerous packages over the years and I have had very few problems, but this is not the point I am trying to make. What happened next was the real surprise.

I emailed the supplier in Germany with images of the torn carton and the note from the U.S. Post Office. They responded by sending me another copy, free of charge – including shipping. Now this was not a $300 book, but it did cost about what I paid recently for a *Conus dusavelli*. An example of some of the good folks we have in the shell world. Thank you to Rita Dietel at:

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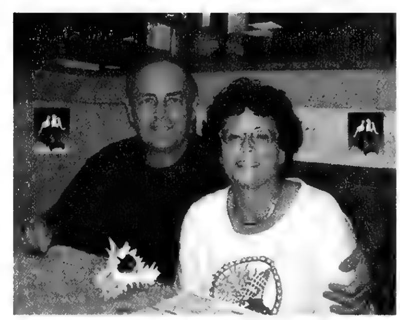
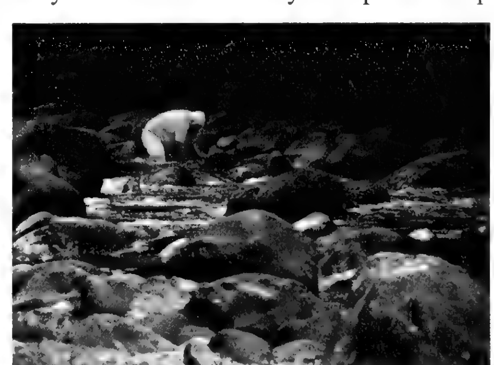
## Errata:



Our last issue had a notice of the untimely death of Marilyn Northrop. Unfortunately, I misspelled Marilyn's last name. Here she is with fellow collector and avid diver, Gene Everson.

## Sheller's Vacation:

This is what happens when a friend asks if you would like them to look for nerites while they are on vacation. They end up knee-deep in a mountain stream, searching under rocks for illsusive little shells. This is COA member Tom Grace hoping there are no snakes under these rocks. Thanks Tom!



# Notes on Two Cases of Molluscan Biogeography

by

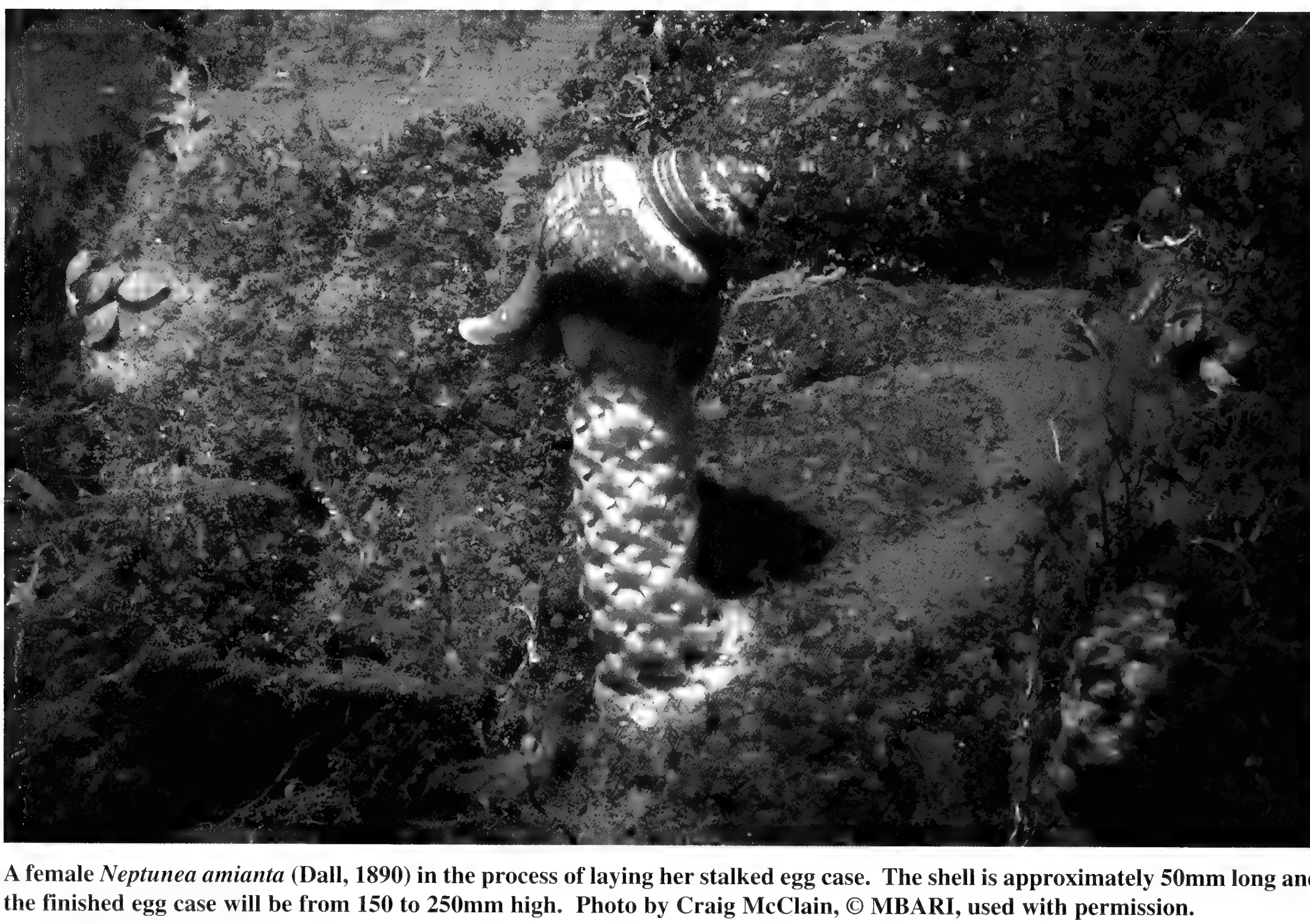
Craig McClain and Jeff Nekola

Alfred Russel Wallace's detailed explorations of flora and fauna of the Malay Archipelago from 1854-1862 probably mark the beginning of biogeography, the study of the geographic distributions of species. Interest has continued, culminating in a field exemplified by both journals (e.g. *Journal of Biogeography*) and organizations (e.g. International Biogeography Society). The pages of this very publication continue to expand and refine our knowledge of molluscan distributional patterns that yield insights into evolution, extinction, dispersal, and biodiversity.

Biogeography might be framed in the context of the question: "Why are not all species found everywhere?" Obviously, the answer resides in a mixture of biological limits (i.e. the giraffe cannot breathe underwater argument) and historical factors such as extinction, speciation, continental drift, volcanic eruptions, and glaciation (i.e. the stuff happens argument). Given all the reasons why an organism cannot be found everywhere, some taxonomic groups are remarkably ubiquitous. Four invertebrate phyla, Arthropoda, Polychaeta, Nematoda, and Mollusca, are found in terrestrial, freshwater, and marine biomes, with disparity in habitats from deserts to hydrothermal vents to polar icecaps. If this publication were titled *American Nematodologist* or another moniker, we would continue to muse on the non-molluscan groups. Partiality aside, however, the success of molluscs and particularly the Gastropoda is astonishing. Here, we illustrate some biogeographical questions, using as examples our own research on two mollusc species, one marine and one terrestrial.

### *Triumphant Molluscs*

The phylum Mollusca is a remarkable group of invertebrates with a history marked by considerable alterations of the Molluscan *bauplan* [ed. note: "bauplan, n. generalized, idealized, archetypal body plan of a particular group of animals." From Lawrence, Eleanor, ed. Henderson's dictionary of biology, 13th ed. Harlow, Essex: Pearson Education Ltd., 2005, xii+748 p.]. As noted by Barnes et al. (1993), "With the possible exception of the Nematoda, the Mollusca, with almost 100,000 species (a very conservative estimate by the way), is the second largest animal phylum. Their success is probably not so much attributable to any particular special anatomical or ecological features of the group as



**A female *Neptunea amianta* (Dall, 1890) in the process of laying her stalked egg case. The shell is approximately 50mm long and the finished egg case will be from 150 to 250mm high. Photo by Craig McClain, © MBARI, used with permission.**

to the extreme plasticity and adaptability of the basic molluscan body plan."

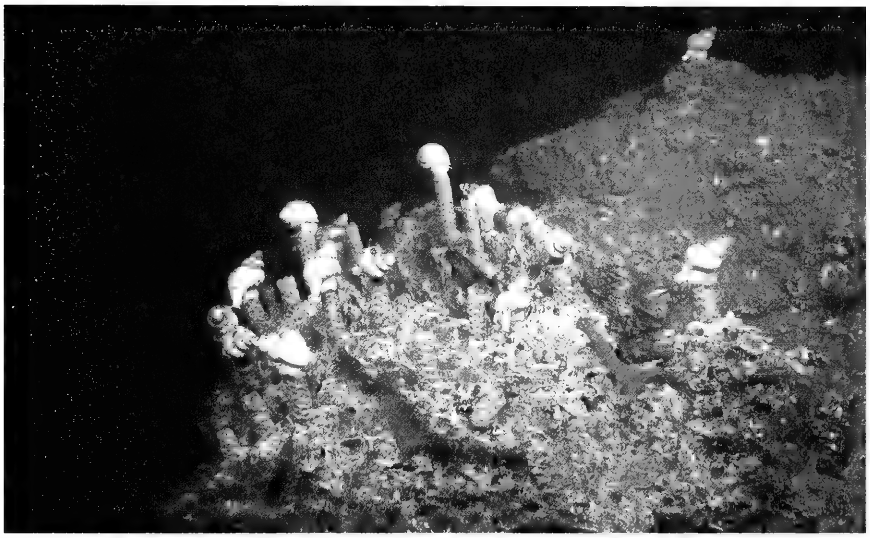
While some classes are limited to one (Cephalopoda, Scaphopoda) or two (Bivalvia) major biotic systems, the Gastropoda have diversified within all three. The radiation of the Mollusca includes the obvious addition of an exoskeleton but also subsequent major modifications by coiling, reduction, duplication, segmentation, and in multiple independent events, the ultimate loss of the shell. The phylum possesses groups with specialized neural systems and two fundamentally different respiratory systems. Body sizes vary over 12 orders of magnitude in volume from the smallest gastropods (such as *Ammonicera minortalis* at 0.0184mm$^3$) to the largest cephalopods (*Archituethis dux* at 45.9m$^3$). Most feeding styles are known from within the group, including parasitism and symbiotic mutualisms (including coral reef zooxanthellae and hydrothermal vent chemosynthetic bacteria). Reproductive biology varies from sexual dimorphism to hermaphrodism, with uniparental mating being common in some species.

**Reflections on the Biogeography of a Deep-Sea Gastropod**

The buccinid *Neptunea amianta* (Dall, 1890) is a deep-water species found off the North American west coast. Typically boreal, the range extends as far south as Punta San José, Baja California, at depths usually between 300 and 1500m. In approximately 15 years of video sampling by the Monterey Bay Aquarium Research Institute with remote operated vehicles in Monterey Canyon, *N. amianta* has been documented from 100-3500m, yet dense aggregations, uncommon in deep-sea snails, seem to occur only between 200-2000m. This range extends the species into the oxygen minimum zone, where oxygen concentrations of the water column fall to such depleted levels that many species are unable to survive or require special physiological adaptations. Previous research by Craig McClain indicates that low oxygen concentrations can reduce shell size in Atlantic deep-sea gastropods; nonetheless, *N. amianta*, is a giant compared to other deep-sea gastropods, obtaining shell heights of 6cm.

Most species in the superfamily Muricoidea are carnivores, secondarily evolving to omnivory, herbivory, or deposit-feeding. Typical of its family, *N. amianta* is a scavenger, and dense aggregations in Monterey Canyon have been associated with every conceivable type of large organic matter such as dead crabs, dead whales, dead cold seep clams, kelp, and wood. The species has amazing fasting potential. In one published experiment, 5 individuals survived 12 months in

**The ocean floor at approximately 1300m in Monterey Canyon. Photo by Craig McClain, © MBARI, used with permission.**



**Above: a closer view of one of the rock mounds with a multitude of *N. amianta* and egg stalks. This shows an unexpected level of activity for such a harsh environment.**
**Below: a closer look still at the activity in these cold and dark depths. Both photos by Craig McClain, © MBARI, used with permission.**

aquaria without food, after which the experiment was terminated. None of the five individuals displayed clear signs of undernourishment, and one produced a large egg case with ~75 juveniles during the seventh month. The remarkable fasting potential and the ability to utilize any food resource are likely responsible for its large depth range and high density.

Buccinids have separate males and females, with fertilization occurring internally. Females can produce over 1000 eggs in a leather capsule. In *N. amianta*, egg capsules are stalked and typically 15-25cm high. Multiple stalked capsules, laid by separate females, are found grouped on a hard substrate such as a rock outcropping. The use of hard substrates may serve the dual purpose of providing a stable base and allowing the egg capsule to extend higher off the bottom into more oxygen rich water. In some *Neptunea* species, the first few juveniles to emerge from the capsule will quickly consume unhatched individuals.

So what limits the depth range of *N. amianta*? The lower depth limit of 1000-2000m possibly reflects food limitation. With increased depth and distance from productive coastal waters comes less organic material, marine snow, sinking from the ocean's surface. This marine snow drives deep-sea ecosystems, and thus increased depth corresponds to decreases in the number of individuals and total amount of biological material, i.e. less to scavenge. Because *N. amianta* is a larger deep-sea gastropod with considerable food demands, greater depths may be inaccessible. The upper depth limit of 100-300m may result from either competition with shallower species or a physiological temperature limit (~8°C).

## Reflections on the Biogeography of a Terrestrial Gastropod

**Prior to 2005, *Hendersonia occulta* (cherrystone drop) was known from only 2 of Pennsylvania's 67 counties. Fieldwork by Dr. Tim Pearce increased the number of known Pennsylvania counties with this rare snail from two to five. Photo courtesy of Tim Pearce of the Carnegie Museum of Natural History.**

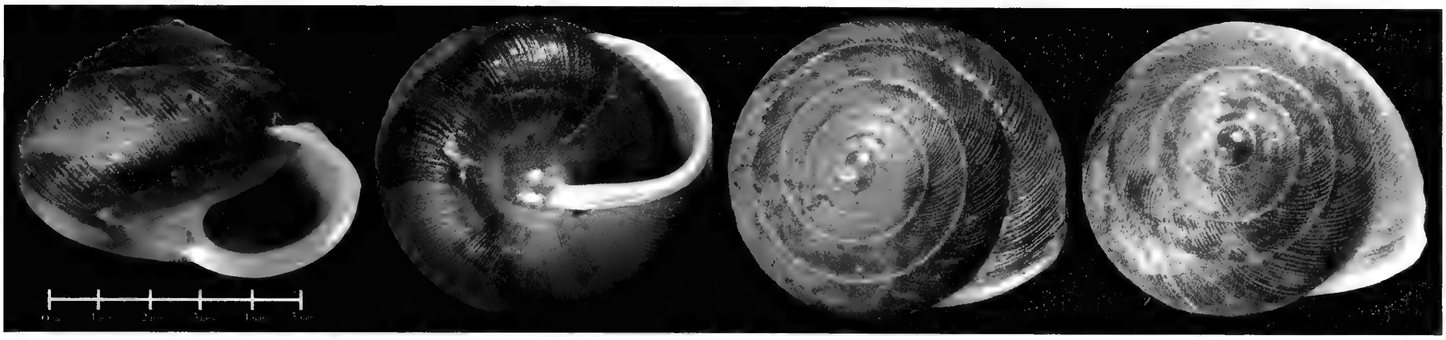
*Hendersonia occulta* (Say, 1831) was first observed by Thomas Say, the father of American malacology, as fossils preserved in Ice Age loess deposits along the banks of the Wabash River at New Harmony, Indiana. New Harmony was settled in 1826 when followers of the Welsh philosopher Robert Owen attempted to create a communist utopia in the hinterlands of the Midwest. The brightest minds in the New World were recruited to participate in this experiment. Riding along with Say on the "Boatload of Knowledge" to New Harmony was also biological illustrator Lucy Way Sistare, whom he secretly married a few months later. While the New Harmony experiment was an abject failure, with the settlement being disbanded in only three years due to constant quarrelling, Say and Sistare completed two monumental works (*American Entomology* and *American Conchology*) while living there.

Because he could only find fossils of *Hendersonia occulta*, Say concluded that this species had gone extinct like the mastodon and saber-tooth tiger. Living populations were soon discovered, however. By the early 1900's, Bohumil Shimek of the University of Iowa had not only located numerous colonies on wooded bluffs in northeastern Iowa and scattered other sites in the upper Midwest, but also in the southern Appalachians at places like Natural Bridge, Virginia, and Limestone Cove, Tennessee. Shimek used the habitats of these modern colonies to prove that loess deposits were formed by wind action, and not water, as many had previously believed.

Based on fossils, we now know that during the last Ice Age, *Hendersonia occulta* ranged from western Nebraska and Kansas to eastern Ohio and south to the Mississippi-Louisiana border near Baton Rouge. The bulk of these sites occurred in mixed tundra-parkland habitats a few hundred miles south of the glacial limit. Climatic reconstructions indicate that these areas had greater precipitation and decreased seasonality as compared to modern times. In particular, even though winter temperatures were comparable, summer temperatures were much cooler (perhaps up to 30-40° F). The closest modern climatic analogues are coastal habitats in the far north (e.g. Newfoundland, Labrador) and south (e.g. Tierra del Fuego, southern New Zealand).

Modern *Hendersonia occulta* populations are limited to three distinct population clusters: one centered along the Upper Mississippi river valley, one along the west shore of Lake Michigan, and one in the southern Appalachians from eastern Tennessee to southwestern Pennsylvania. In all of these areas, this species is limited to microhabitats that mimic its favored Ice-Age climate. In the southern Appalachians, populations are restricted to cool mountain coves and talus slopes. In eastern Wisconsin, populations are found only within a few dozen miles of the cool waters of Lake Michigan where summer temperatures rarely exceed 90° F, winter temperatures are moderated as compared to inland areas, and fog banks are common.

In the upper Mississippi valley, populations are limited to cool rocky bluffs and to a very special habitat termed algific talus slopes. 'Algific' is derived from the Latin word for cold (*algus*) and means 'cold-producing'. In this region algific slopes are found on steep, typically north-facing limestone slopes that shelter ice caves. The damp air exiting these caves rarely exceeds 45° F, even during the heat of summer. Coupled with winter temperatures typical for the region, the microclimate of these sites is an almost exact match to the North American Midwest regional climate of 18,000 years ago. These sites harbor not only relict populations of *Hendersonia occulta*, but a number of other species whose ranges were much more extensive during that time, including *Vertigo hubrichti* (Pilsbry, 1934), *Vallonia gracilicosta* Reinhardt, 1883, and the federally endangered *Discus macclintockii* (F.C. Baker, 1928). Algific slopes cannot, however, be considered exact miniature replicates of Ice Age habitats. Fossils of *Hendersonia occulta* are also commonly found with fossils of *Oreohelix strigosa cooperi* (W.G. Binney, 1958), *Vertigo oughtoni* Pilsbry, 1948, and *Vertigo hannai* Pilsbry, 1919. While none of these still resides in the upper Midwest, the first species still exists in mesic pine forests of the Black Hills, and the latter two in arctic tundra from Alaska to Hudson Bay. These snails tell us clearly that the Ice Age climate and habitats of the Midwest have no exact modern analogs.



**Red and yellow color forms of *Hendersonia occulta* (Say, 1831) (called the cherrystone drop) from the Elk River East algific talus slope in Delaware County, Iowa. Collected July 13, 1998, Nekola collection accession #3810. Photo by Jeff Nekola.**

*Hendersonia occulta* also helps us understand the history of ecological communities through deep time. The genus *Hendersonia* is a member of the Helicinidae, a prosobranch family that is primarily tropical in distribution, being found in both the New and Old Worlds and also on many Pacific islands. The population of *Hendersonia occulta* along the floodplain of the Escanaba River in the Upper Peninsula of Michigan is, in fact, the most northerly known for any member of this family. *Hendersonia* has a highly disjunct distribution, with species found in eastern North America, as well as in China and Japan, but not in western North America or western Eurasia. Similar distributions occur in a number of other land snail genera and families, including *Gastrocopta*, *Vallonia*, and the Strobilopsidae. Amazingly, similar distributions occur in many other groups, including trees, wildflowers, and amphibians. The cause of these convergent disjunction patterns is hinted at by the fossil record of *Hendersonia*, which also extends into 60-20 million-year-old sediments of the western USA; clearly Asian and eastern North American populations were not always so isolated. Similarly, *Strobilops* and *Gastrocopta* were found in western Eurasia and North America until about 10 million years ago. The fossil record for many broadleaf trees (maples, oaks, birches, sweet gums, sycamores, laurels, etc.), as well as many conifers (such as redwoods, cypress, and ginkgo), were also more globally continuous at that time with populations occurring throughout the northern middle latitudes. This mixed forest encircling the globe until about 15 million years ago has been termed the 'arcto-tertiary forest'. A cooling global climate and continued uplift of the Himalayas and Alps and Rocky Mountains, which decreased rainfall in some areas, brought this era of Earth's history to a close. Within each of the remaining mesic forest centers (eastern North America and Eurasia, the Caucasus and Anatolia, western North America and Eurasia), somewhat random subsets of this original forest persist. Among these relicts is *Hendersonia*. Just like the redwoods of the California coast, the laurel forests of Madeira and the Caucasus, or the maple-palm forests of China and northern Mexico, this species provides us a living glimpse of an ancient world long lost from view.

Barnes, R.S.K., Calow, P., & Olive, P.J.W. 1993. *The Invertebrates: A New Synthesis*. Oxford: Blackwell Scientific Publications.

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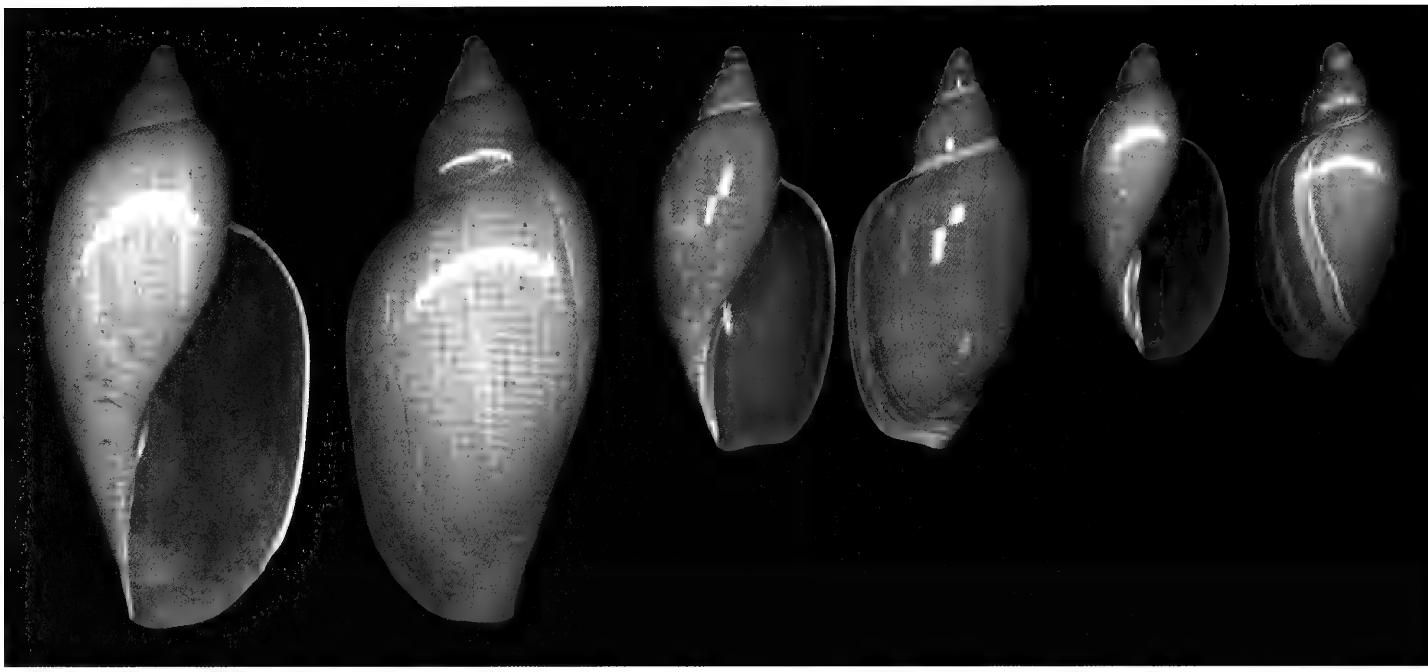
**A closeup look at *H. occulta*, a rare snail that once ranged throughout most of the Midwest. With the loss of its Ice Age climate it has been restricted to a few specialized habitats. Photo courtesy of Tim Pearce of the Carnegie Museum of Natural History.**

# The Largest Marginellid

by Jerry G. Walls



**A series of *Marginellona gigas* (Martens, 1904) from deep waters south of Taiwan in the South China Sea. The largest is 172mm, the middle specimen is 125mm, and the smallest is 95mm. The white subsutural marking is apparent on the two smaller specimens. Image by T. Eichhorst.**

The margin shells or marginellas (families Marginellidae and Cystiscidae) are not among the most popular shells with collectors, probably due to the fact that so many are micromollusks, under a quarter-inch in length, or just plain white or tan. There are some colorful species in the group, especially some of the species of *Marginella* and *Glabella* from Africa, but overall the group is not noted for stunning colors or oversized shells.

One magnificent exception to the generally small size of the group is the exceedingly volute-like *Marginellona gigas*, a 6-inch margin shell that remained an enigma for most of the past century. The species was described by the German malacologist Martens in 1904 based on both shell and anatomical characters and placed in the Marginellidae as a strange new subgenus of *Marginella*. The type specimen was taken by the "Valdivia" Expedition at over 400 fathoms west of Sombrero Channel, Nicobar Islands, in the northern Indian Ocean. Unfortunately, Marten's specimen had a severely damaged shell that had to be reconstructed, but the characters of the radular teeth placed it closer to Marginellidae than to Volutidae. Clearly *Marginellona* was a strange animal. Other than inclusion of the genus and species in the German malacological compendiums of Thiele and Wenz in the early part of the century, the species was largely forgotten.

Then, in 1967, Harald Rehder of the Smithsonian described a new genus and species of volute, *Sigaluta pratasensis*, based on two shells (without soft parts), the largest about 3 inches long, from west of Pratas Reef (or Island) in the South China Sea (roughly between Taiwan and Hong Kong) at over 200 fathoms. Rehder considered the shells to be fairly typical volutes, though not especially closely related to other described genera. The position of *Sigaluta* as a volute was somewhat strengthened when a few years later a second species of the genus was described from off Baja California.

It took about 20 more years (you will still find it listed as a volute in Abbott & Dance's *Compendium of Seashells*) before new specimens from off Vietnam yielded enough material to connect Marten's giant marginellid from the Indian Ocean with Rehder's small volute from the China Sea. A Russian trawling expedition took several specimens of various sizes, including some with preserved animals. The smaller shells agreed well with *Sigaluta pratasensis*, while their anatomy definitely placed them as marginellas, not volutes. Harasewych and Kantor in 1991a placed *Sigaluta pratasensis* as a synonym of *Marginellona gigas* and fully described and illustrated the anatomy, showing that *Marginellona* is a very primitive marginellid with some similarities to the Volutidae. The genus, along with the giant South African marginella *Afrivoluta pringlei* (not surprisingly also first described as a volute) had been placed in a distinct subfamily, Marginelloninae, by Coan in 1965 based on characters of the radular teeth.

Today *Marginellona gigas*, which might be called the Pratas margin shell if you like common names (I don't), is no longer a mystery shell to be found only in museums. Specimens are widely available for $50 to $100 or occasionally less due to extensive

trawling off the coast of Vietnam, the current source of almost all specimens. An array of large and small specimens can be obtained from many dealers, and the shell is available to almost any dedicated marginella collector. Though I haven't noticed many specimens coming from trawling off the Chinese coast, I understand that a few have been taken near Pratas Island (Reef) in the past few years and also from near the Pescadores (Penghu) Islands off Taiwan. Since there seems to be no deep trawling currently in the northern Indian Ocean, the species remains known from that ocean by only the holotype taken 100 years ago. Currently the known range of the species includes the Nicobar Islands and the China Sea off Vietnam and between Hong Kong and Taiwan in a depth range of roughly 160 to 550 fathoms; some small specimens from off Vietnam are labeled as coming from only 30 to 40 fathoms, perhaps incorrectly. This species occurs on coarse sand and fine mud bottoms and probably burrows in the bottom.

Recognition is easy even at small sizes because the shell has a very large aperture, large protoconch slightly tilted relative to the axis of the shell, and just two folds or plicae on the columella, one a vertical siphonal fold, the other an oblique fold similar to the more abundant folds or teeth of other marginellas. There is no obvious longitudinal or spiral sculpturing. A shallow siphonal notch is present, as is a very weak notch where the lip joins the body whorl. The coloration is a patternless pale tan to grayish tan, including inside the mouth, with a whitish columellar area marked with tan on the oblique fold and at the tip of the siphonal fold. Small specimens may show a narrow white line along the sutures of the spire and body whorl much as in *Afrivoluta pringlei*. Unlike that South African giant marginella, there is no callus where the lip merges with the body, and the edge of the lip is very thin and often damaged. Specimens seem to usually have healed or recent breaks and scars and often spots where sand and mud have been incorporated into the nacre.

***Afrivoluta pringlei*** **Tomlin, 1947, was also thought to be a volute when first discovered. This specimen is 115mm and was taken in 375 fathoms off South Africa. The large callus, thick lip, and numerous columellar folds help distinquish it from *Marginellona gigas*. Image by T. Eichhorst.**

This is by far the largest marginellid, with a known size range from at least 39 to 175mm, roughly 1.5 inches to almost 7 inches. The runner-up in the family is *Afrivoluta pringlei*, which seldom exceeds 5 inches, so *Marginellona gigas* is almost certain to retain its title as the giant in the family for a long time.

By the way, if you are curious as to what happened to the other species of *Sigaluta*, it now resides in the Volutidae as *Tenebrincola cukri* (Rokop, 1972), considered to be a relative of the Australian *Ericusa* volutes ("(Harasewych and Kantor, 1991b). It remains rare in collections and is seldom offered to fanciers.

Marginellids are fascinating, if usually ignored, shells that most collectors and dealers (as well as scientists) find difficult or impossible to identify, but there are some very interesting shells in the group. I certainly can recommend the marginellas to anyone who wants a challenging group.

Literature

**Coan, E.** 1965. "A proposed reclassification of the family Marginellidae," *Veliger*, 7(3): 184-194.

**Harasewych, M. G. and Y. I. Kantor.** 1991a. "Rediscovery of *Marginellona gigas* (Martens, 1904), with notes on the anatomy and systematic position of the subfamily Marginelloninae (Gastropoda: Marginellidae)," *Nemouria*, No. 37: 1-19.

**Harasewych, M. G. and Y. I. Kantor.** 1991b. "*Tenebrincola frigida*, a new genus and species of abyssal volute from the northern Pacific Ocean (Gastropoda: Volutidae)," *Nemouria*, No. 38: 1-11.

**Rehder, H. A.** 1967. "A new genus and two new species of the families Volutidae and Turbinellidae (Mollusca: Gastropoda) from the western Pacific," *Pacific Science*, 21(2): 182-187.

**Tach, N. N.** 2002. "Some deep water shells from Vietnam," *American Conchologist*, 30(1): 24-25.

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# *SCUM XI: Southern California Unified Malacologists*

by Lindsey T. Groves

Forty-nine professional, amateur, and student malacologists and paleontologists attended the 11th annual gathering of **S**outhern **C**alifornia **U**nified **M**alacologists (SCUM) in the French/Parker Learning Center at the San Diego Natural History Museum (SDNHM), San Diego, California, on Saturday, January 20th, 2007. This informal group continues to meet on an annual basis to facilitate contact and keep members informed of research activities and opportunities. In keeping these gatherings informal, there are no dues, officers, or publications. It is hoped that the continuing success of informal groups such as SCUM, Bay Area Malacologists (BAM), and Mid-Atlantic Malacologists (MAM) will encourage other regional groups of malacologists and paleontologists to meet in a likewise manner. For the record this was the largest SCUM gathering to date.

SCUM XI was hosted by Scott Rugh and Tom Deméré who welcomed the group and updated everyone on recent happenings. After introductions all SCUM attendees were given the opportunity to present current mollusk related research and activities. Most presentations were informal but several were more detailed. Of particular interest were Brian Cheng's presentation on the invasive Asian mussel *Musculista senhousia* (Benson *in* Cantor, 1842) and its effects on native species of mollusks and sea grasses and pre-recruitment vs. post-recruitment effects; Mike Vendrasco's presentation of chitons of the Pliocene San Diego Formation; and Bill Hewson's presentation on the biogeography of *Lottia strigatella* (Carpenter, 1864) and *L. paradigitalis* (Fritchman, 1960). Numerous discussions and comments resulted from many of the presentations. A guided tour of the SDNHM facilities including the Recent and fossil mollusk collections and current fossil exhibits was available for interested parties. SCUM XII will be hosted by Lindsey T. Groves and Ángel Valdés of the Natural History Museum of Los Angeles, tentatively on January 19th, 2008. On a sad note, charter SCUM member, opisthobranch enthusiast, and master photographer David Mulliner of San Diego passed away on Wednesday January 24th. He was 85 years old.

**SCUM XI participants, interests, and activities:**

**Kelvin Barwick** (San Diego, CA): Various water monitoring projects with an interest in molluscan and polychaete taxonomy.
**Hans Bertsch** (San Diego, CA): Nudibranch research and announced the 2nd revised edition of *Sea of Cortez Marine Invertebrates* with the late Alex Kerstitch. Presented a narrative on the research vessel *Western Flyer* and the collecting and writing collaboration of John Steinbeck and Ed Ricketts in the Sea of Cortez.
**Ian Browne** (San Diego Nat. Hist. Mus.): Works in the paleontology section at SDNHM.
**Rosa Campay-Bertsch** (San Diego, CA): Wife of SCUM member Hans Bertsch, no report.
**Brian Cheng** (San Diego St. Univ.): Researching the introduced Asian mussel *Musculista senhousia* in Mission Bay. Presented the relationships of the Asian mussel and native species, recruitment strategies and effects, and why eradication is probably impossible.
**Paul DeFlorio** (Jet Propulsion Lab, Pasadena, CA): Amateur shell collector.
**Tom Deméré** (San Diego Nat. Hist. Mus.): Researches Cenozoic fossil assemblages of San Diego County, particularly vertebrates and invertebrates from the San Diego Formation.
**Matt Doi** (Pacific Conchological Club): Amateur collector of Recent and fossil shells (especially from Fl. Pleistocene formations).
**Jan Domnitz** (San Diego Nat. Hist. Mus.): Volunteer at SDNHM.
**Patricia Don Vito** (San Diego Nat. Hist. Mus.): Volunteer in the paleontology lab of SDNHM.
**Wes Farmer** (San Diego, CA): Presented on invertebrates and fossils from Punta Cabras, Baja California, Mexico.
**Christina Fernandez** (Santa Barbara, CA): Interest in chitons and their systematics.
**Daniel Geiger** (Santa Barbara Mus. Nat. Hist.): Research on worldwide scissurellid gastropods using molecular and histological techniques. Also operates the scanning electron microscope (SEM) at SBMNH.
**Lance Gilbertson** (Newport Beach, CA): Retired from teaching duties but continues research on helminthoglyptid land snails from the southwest USA.
**Constance Gramlich** (San Diego St. Univ.): Marine Science lab technician with an interest in mollusks.
**Lindsey Groves** (Nat. Hist. Mus L.A. Co.): Continues fossil cowry research and work on the earliest known abalone (Late Cretaceous of Los Angeles County) with John Alderson. Continues with the companion volume to Keen & Bentson's (1944) *Check List of California Tertiary Marine Mollusca.*
**Maggie Hart** (San Diego Nat. Hist. Mus.): Currently Fossil Lab Preparation Manager at SDNHM.
**Carole Hertz** (San Diego Shell Club): Editor of *The Festivus* (San Diego Shell Club publication), which she has done for the past 30 years! Recently published a biography on mollusk researcher/collector A.M. Strong.
**Jules Hertz** (San Diego Shell Club): Business Manager for *The Festivus*. Recently co-authored with Kirstie Kaiser on a new distributional record for *Solenosteira anomala* (Reeve, 1847).
**William Hewson** (Calif. St. Univ., Fullerton): Presented his thesis research on the phylogeography of the limpets *Lottia strigatella* (Carpenter, 1864) and *L. paradigitalis* (Fritchman, 1960) and whether or not Pt. Conception, Santa Barbara Co., California, is a barrier to both species or is there an undescribed species present?
**Gracie Jones**: Attended meeting with Paul DeFLorio, no report.
**Diane Jovee**: Attended meeting with Pat LaFollette, no report.
**Kathy Kalohi** (Pacific Conchological Club): Amateur collector and SCUBA enthusiast.
**George Kennedy** (Brian F. Smith & Assoc., Poway, CA): SCUM co-founder. Continues his research of Pleistocene marine terraces of California and paleontological monitoring projects around San Diego Co.
**Yvonne Kugies** (San Diego Nat. Hist. Mus.): Currently works in the paleontology lab at SDNHM.

**Attendees, left to right (image by the author):**
**Front Row: Carol Stadum, Shawn Wiedrick, Pat LaFollette, Wendy Storms, Kelvin Barwick, Ángel Valdés, Rosa Campay-Bertsch.**
**Second Row: Matt Doi, Phil Liff-Grieff, Lance Gilbertson, Constance Gramlich, Hans Bertsch, Barbara Myers, LouElla Saul.**
**Third Row: Dan Yoshimoto, Kathy Kalohi, Christina Fernandez, Tom Deméré, Brian Cheng, Eliza Moore, Richard Squires, Charles Powell II.**
**Fourth Row: Maggie Hart, Yvonne Kugies, Greg Rouse, Mary Stecheson, Nancy Schneider, Bill Schneider.**
**Fifth Row: William Hewson, Nerida Wilson, Daniel Geiger, Jim McLean.**
**Sixth Row: Ian Browne, Mike Vendrasco, Lindsey Groves, Kent Trego, Paul DeFlorio, Gracie Jones, Jules Hertz, Carole Hertz, Scott Rugh, Rosangela Rugh, George Kennedy.**
**SCUM XI attendees not in photo: Jan Domnitz, Patricia Don Vito, Wes Farmer, Diane Jovee, Chris Plouffe, Melissa Soetaert.**

**Pat LaFollette** (Nat. Hist. Mus. L.A. Co.): Research Associate at LACM and currently reviewing and rearranging the Pyramidellidae in the malacology collection.
**Phil Liff-Grieff** (Pacific Conchological Club): Editor of *Las Conchas* (publication of the Pacific Conchological Club) and land snail collector. Presented a talk on fossil land snail species of Kaua'i, Hawai'i and California coastal species of Helminthoglyptidae and species pairs and their distributions (especially *Helminthoglypta traskii* and *H. tudiculata*).
**Jim McLean** (Nat. Hist. Mus. L.A. Co.): Continues work on his eagerly anticipated volumes on North Pacific shelled gastropods. Over 100 sample plates were presented to the group for examination.
**Eliza Moore** (San Diego St. Univ.): Studying sea grass beds as part of her thesis research.
**Barbara Myers** (San Diego Shell Club): A volunteer in the SDNHM Recent mollusk collection for the past 30 years and recently assisted with the installation of the collection into the new storage facility of the museum.
**Chris Plouffe** (San Diego Nat. Hist. Mus.): Works in the paleontology lab at SDNHM.
**Charles Powell II** (U.S. Geological Survey): Research on Neogene and Quaternary mollusks of California, especially their biostratigraphy.
**Greg Rouse** (Scripps Inst. Oceanog.): New professor and benthic invertebrates collection manager.
**Rosangela Rugh** (San Diego, CA): Wife of Scott Rugh, no report.
**Scott Rugh** (San Diego Nat. Hist. Mus.): Collection Manager of Invertebrate Paleontology and has an interest in both Recent and fossil mollusks.
**LouElla Saul** (Nat. Hist. Mus. L.A. Co., Res. Assoc.): Research of Cretaceous mollusks with Richard Squires particularly on the volutid genus *Volutoderma*. She also continues on a long anticipated volume on the invertebrates of the Miocene Topanga Formation.
**Bill & Nancy Schneider** (San Diego Shell Club): Amateur collectors. Presented a talk on the mollusks and other invertebrates found on a spectacular large black coral specimen caught on a rod and reel in 128 m on Hurricane Bank (1000 miles south of San Diego). Invertebrates included bivalves, gastropods, bryozoans, scleractinian corals, hydroids, and barnacles.
**Melissa Soetaert** (San Diego Nat. Hist. Mus.): Currently works in the paleontology lab at SDNHM.

**Richard Squires** (Calif. St. Univ., Northridge): Fossil mollusk research, particularly the biostratigraphy and paleontology of Cretaceous through Cenozoic gastropods with LouElla Saul.
**Carol Stadum** (Carlsbad, CA): Volunteers in the Invertebrate Paleontology section of SDNHM. Recently completed a video on collecting fossil mollusks from the Pliocene San Diego Formation.
**Mary Stecheson** (Monrovia, CA): Recently spent time curating specimens from her MS thesis on the molluscan fauna of the Late Cretaceous Chatsworth Formation of southern California.
**Wendy Storms** (City of San Diego): Participates in various water monitoring projects and has an interest in molluscan taxonomy.
**Kent Trego** (San Diego Shell Club): Reported on abyssal and hadal holothurians (Echinodermata) from off southern California.
**Ángel Valdés** (Nat. Hist. Mus. L.A. Co.): Phylogenetic research on opisthobranch gastropods of the Caribbean and Panamic provinces. Recently completed *Caribbean Sea Slugs*, a guidebook to the opisthobranchs of the Caribbean area with several co-authors.
**Mike Vendrasco** (Univ. Calif. Santa Barbara): Research on fossil and Recent chitons in post-doctorate position at UCSB. Presented a three-part talk on Cambrian shell micro-structures; aesthete canal morphology in chitons; and the impressive chiton fauna of the Pliocene San Diego Formation.
**Shawn Wiedrick** (Pacific Conchological Club): Vice-president of the PCC and interested in all areas of shell collecting (especially marine and land snails).
**Nerida Wilson** (Scripps Inst. Oceanog.): Post-doctorate position, presented a talk on the phylogeography of *Doris kerguelenensis,* a direct-developing species with an apparent long-distance dispersal. Her ongoing research asks, do circumpolar species really exist or are there multiple species present?
**Dan Yoshimoto** (Eureka, CA): Amateur collector and collaborator with Jeff Robinson on a survey of the mollusks of Humboldt Bay, Eureka Co., California.

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Malacology Section
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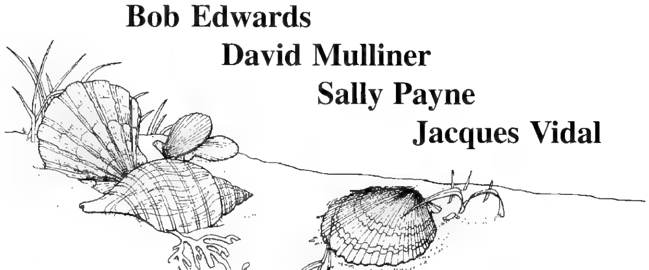
Los Angeles, CA 90007
lgroves@nhm.org

## In Memoriam

**Dr. D. V. Cacioppo**
**Bob Edwards**
**David Mulliner**
**Sally Payne**
**Jacques Vidal**

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## Contributor's Note

Dr. Robert Robertson, Emeritus Curator of Malacology, Academy of Natural Sciences of Philadelphia (ANSP), feels extremely honored in having had named for him the following gastropods:

*Microceramus (Spiroceramus) robertsoni* Clench, 1963 — holotype and only known specimen an empty, cracked shell

*Aperiovula robertsoni* C.N. Cate, 1973 — an (uncracked) egg shell

*Miralda robertsoni* Regteren Altena, 1975 — a parasitic pyramidellid

*Rissoella confusa robertsoni* Ponder & Yoo, 1977

*Favartia robertsoni* D'Attilio & Myers, 1986 — a rock shell (in a hard place?)

*Macromphalina robertsoni* Rolan & Rubio, 1998 — a tiny marine snail known only from a few empty shells from the south coast of Cuba; ANSP has a paratype

Such is glory. (Robert Robertson, February 4, 2007)

# SOUTH BY SOUTHEAST – EXPLORING THE SOUTH COAST OF ROATAN, HONDURAS

**by Karen VanderVen**

Roatan, one of the Bay Islands of Honduras, is growing in fame as a dive site where one can frolic with whale sharks. Divers flock to the northwest coast of the island where the dive resorts are concentrated. Among shellers the area is renowned for the beautiful "K" cones: *Conus kulculcan* Petuch, 1980, and *Conus kalafuti* Da Motta, 1987, found by diving at depth on the walls, or marine cliffs as one shell book refers to them.

What happens when a group of intrepid shellers visits the less developed southeast coastline of Roatan where the approach will primarily be shallow water shelling? Armed with both snorkel equipment and bottles of OFF to battle Roatan's famous no-seeums and mosquitoes, a group of 8 arrived on June 20 to find out. Led by Peggy Williams, the shellers were: Marc and Suzie Nathanson, Nancy Rogge, Linda Nelson, G. Thomas Watters, Dorothy Kirstead, and myself.

We were met by our taxi at the airport in Coxon's Hole and as darkness fell we had our first experience with the hilly terrain of the narrow island. Roatan is completely fringed by stunning reefs that come close to shore and we could sometimes see both shores at once as we barreled down the main road. We finally turned down a steep and pitted dirt road and, in a nail biting descent, drove into the Calabash Cove Beach Resort that was to be our home for the next five days. There we met our hosts, Britney and Tony, and their staff, who in the days to come added a very special touch with their energy, hospitality, and helpfulness.

### *Please Don't Pat the Sea Urchin*

Early next morning before breakfast Marc and I (we couldn't wait) went into the water in front of our cottages to get an overview of what was to come. Hidden in the *Thalassia* turtlegrass were a few live shells such as the common muricid *Phyllonotus pomum* (Gmelin, 1791), various *Marginella* species, the occasional *Oliva reticularis* Lamarck, 1810, and perhaps of greatest interest, *Columbella dysoni* Reeve, 1858. This latter species is easily differentiated from the more common and colorful *Columbella mercatoria* (Linnaeus, 1758). *Columbella dysoni* has a more slender shape and broken brown spiral markings on a cream background.

After a bountiful breakfast we piled our gear into the fiberglass dive boat that was to take us to various shelling spots up and down the coast. Our captain was "Mr. Cebert," a colorful local who could always get the motor to start and who guided us skillfully around the offshore coral heads and reefs at low tide.

Peggy oriented us to some of the new varieties and species that have been found on Roatan. These included a shell similar to the familiar *Muricopsis oxytatus* (M. Smith, 1938). I later found this newly named shell was *Murexsul chesleri* Houart, 2006, named after the well-known sheller John Chesler. Peggy reminded us that we might also find an endemic variety of *Dermomurex* and *Latirus*, as well as the beautiful little black and red striped murex, *Muricopsis deformis* (Reeve, 1846). So the hunt was on for these particular

**Above: Our boat captain Mr. Cebert and one of his staff takes us out to the reef. Image by the author.**
**Below: The group hits the "shell store" and finds some great bargains. Image by the author.**

shells, the "K" cones, and whatever else we found that would represent the characteristic molluscan fauna of the offshore reef on the south side of Roatan.

Our first destination was a reef not far from the resort. Mr. Cebert anchored inside the reef and we rolled into the water. There were grass and sand patches and occasional rock and coral slabs to turn. Earlier one of the shellers asked me about how to look for shells under rocks. I told her how to "feel" the underside of a rock for small shells by gently patting it as well as by fanning

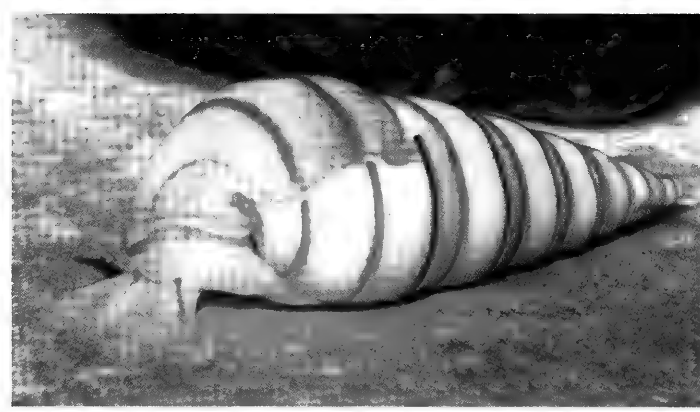
**Images from top to bottom:**

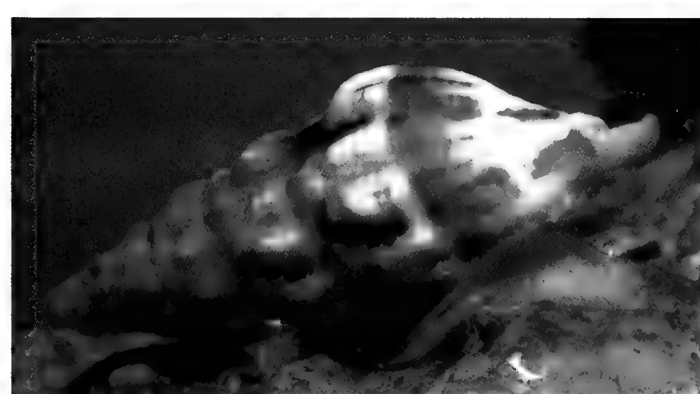
**A view of the reef on the south side of Roatan Island, an incredibly rich and diverse habitat. Photo by Linda Nelson.**

**The bright and colorful *Muricopsis deformis* (Reeve, 1846). Photo by Peggy Williams.**

***Pyramidella dolobrata* (Linnaeus, 1758) is a delicate shell with a clean brown and white pattern. Photo by Peggy Williams.**

**One of seemingly countless small turrids, *Splendrilla fucata* (Reeve, 1845) can be found at moderate depths thoughout much of the Caribbean. Photo by Peggy Williams.**





the sand underneath it for buried specimens. "Just don't pat the sea urchins," I admonished, since they often appear under an overturned rock or slab.

This initial sortie brought in some of the special shells, plus others. There were *Muricopsis deformis* and *Murexsul chesleri*, as well as *Cymatium martinianum* Orbigny, 1845, and *Cymatium nicobaricum* (Röding, 1798). We also found *Vasum muricatum* (Born, 1778), the Caribbean vase shell, perhaps the most abundant shell found on this trip. They ranged from the super old and gnarly with black apertures, to the cleaner somewhat smaller ones with splashes of stunning purple.

Peggy retrieved the first, but not the last, large and beautiful triton trumpet, *Charonia variegata* (Lamarck, 1816). Interesting small shells abounded, including a small orange-striped marginellid, *Volvarina avena beyerleana* (Bernardi, 1853), and the turbinid *Arene cruentata* (Mühlfeld, 1829). I scored some beautiful specimens of my favorite, *Columbella mercatoria*, from under just one rock. I found a beautiful little orange *Latirus*, perhaps the endemic variation *Latirus trochlearis* Kobelt, 1876. Dot found perhaps the most unusual shell of the trip, a small white endemic marginellid that enveloped itself with a spectacular black mantle. Peggy kept this alive in her indoor aquarium so everybody could see what at present seems to be an unnamed shell.

## *Cliff Notes*

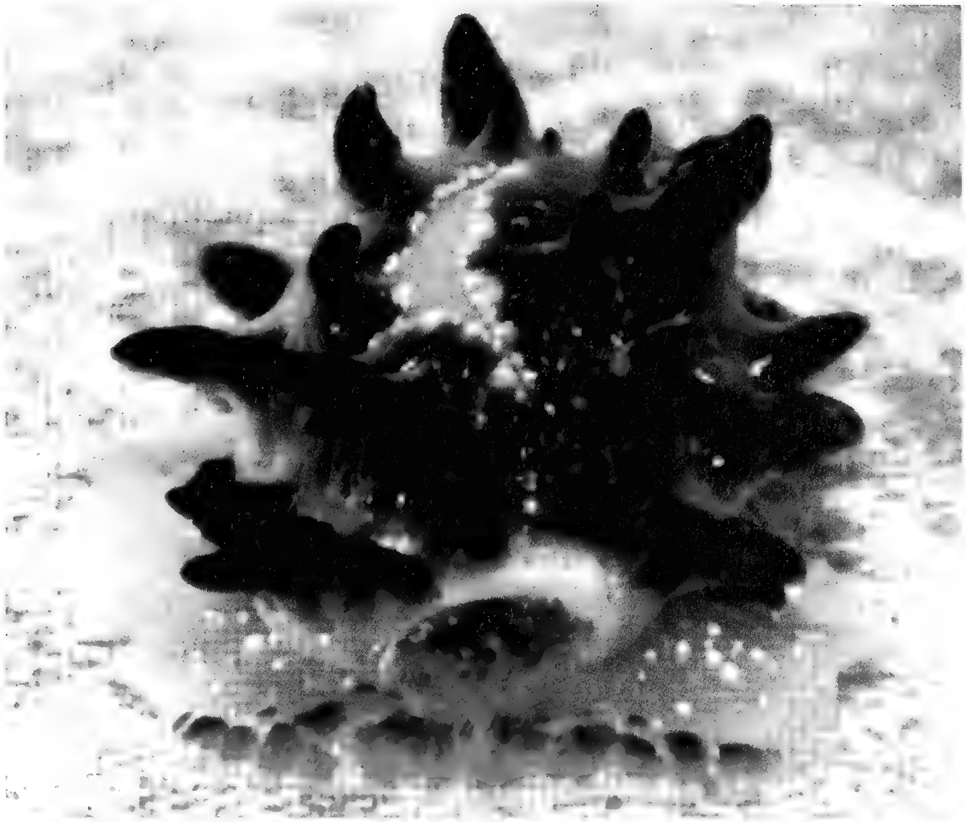
The next morning the sky and seas were gray and angry, so that was an ideal time for an island tour and shopping. The taxi pulled us up the steep rocky dirt road and soon we were once again able to view both shores of the island with its close offshore reef marked by breaking waves and picturesque inlets lined with shacks on stilts and anchored shrimp boats. We soon stopped at a souvenir stall that included shells on a table. We were out of the van faster than, well, shellers getting out of a van when there are shells nearby. We didn't regret the stop. There were beautiful *Cassis tuberosa* (Linnaeus, 1758), *Charonia variegata,* and *Strombus costatus* Gmelin, 1791 (although later we were to find our own specimens of these). Peggy found another seller of shells in a nearby town where, for lucky me, there was a special variety of music volute, *Voluta musica demarcoi* Olsson, 1965, at a reasonable price.

That afternoon we were dropped off inside another reef just south of the resort and the boat took Marc and me just outside the reef so we could make our first scuba dive. At about 20 feet, there was pristine and magnificent coral. As we swam along the water became dark, dark blue. The wall! In Roatan, the reef that fringes the island close to shore soon transforms into a wall or cliff suddenly extending many hundreds of feet down below the surface. It was now time for me to face my little fear of walling, diving in a spot where the bottom is extremely deep. We swam over the precipice and moved up and down on the wall. Peggy had mentioned that cones liked to live in little holes in the wall and I was so busy scrutinizing these that I had no time to worry about being drawn down hundreds of feet by some mysterious force. We dove another day as well and while we found no cones, there were *Chlamys imbricata* (Gmelin, 1791), *Pyramidella dolobrata* (Linnaeus, 1758), and *Bursa thomae* (Orbigny, 1842).

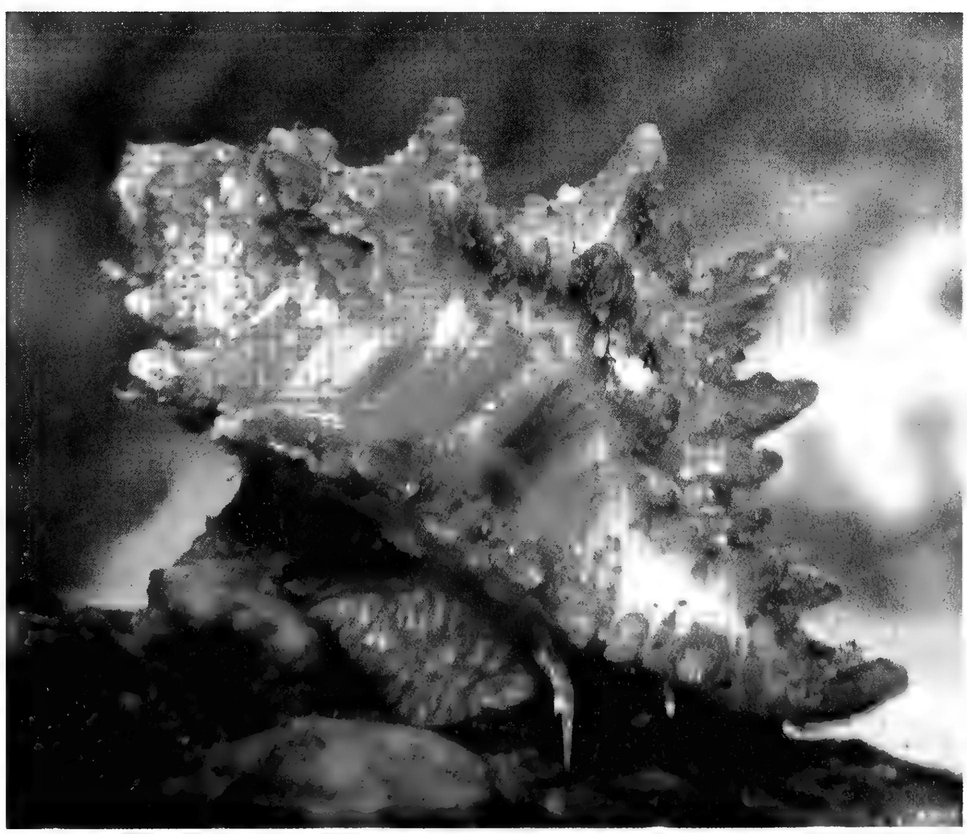
***Keep It Reef***

On subsequent days we explored the reefs, both east and west of our resort. At one place were two small rocky islands named "Cow and Calf," although for some reason I kept referring to them as "Hen and Chickens," the name of a similar reef in Key West. This particular area turned out to be productive for bivalves, especially cockles. There were egg cockles, (*Trachycardium laevigatum* (Linnaeus, 1758)), spiny cockles (*Trachycardium isocardia* (Linnaeus, 1758)), and the yellow cockle (*Trachycardium muricatum* (Linnaeus, 1758)). I was amazed to spot a huge *Cymatium femorale* (Linnaeus, 1758) in the grass.

We proceeded to another area where our gracious hosts had planned a lunch on the beach. No sooner had we hit the shore than we were engrossed in searching the tideline piles where there were several marginellid species, *Olivellas*, and many other interesting shells. The delicious lunch waited. Shellers would rather paw through sand and dead seaweed than eat!



**A small unidentifed marginellid cruises in the photograph tank with its mantle fully extended. Photo by Peggy Williams.**



**A small brown and white *Murexsul chesleri* Houart, 2006, found in coral rubble along the inner reef. Photo by Peggy Williams.**

**Above:** ***Pilsbryspira albomaculata*** **(d' Orbigny, 1842) can be found as far north as the Texas coast. Photo by Peggy Williams.**

**Below:** ***Bursa granularis cubaniana*** **(d' Orbigny, 1842), the Western Atlantic version of the wide-ranging** ***Bursa granularis granularis*** **(Röding, 1798). Photo by Peggy Williams.**

After we had eaten, we explored a rock outcropping and off-shore grass beds. There were milk conchs, *Strombus costatus,* everywhere. Peggy found an absolutely stunning *Strombus pugilis* Linnaeus, 1758, one of my favorite shells. I admired it unabashedly and Peggy generously gave it to me before we left. The prize now occupies a prime spot in my new shell cabinets. In the rocks were a number of *Cymatium* species, including *C. nicobaricum* (Röding, 1798) and *C. caribbaeum* Clench & Turner, 1957. A bit of excitement happened while Peggy was collecting sand samples (grunge) from under coral heads. A moray eel snapped at her hand. It appears not everyone appreciates shellers.

We continued to explore, moving out closer to the fringing reefs. While probing a small reef wall filled with small holes and patches of green algae, standing only in two feet of water, a splotch of orange caught my eye. Reaching down I plucked out (unbelievably) a *Conus granulatus* Linnaeus, 1758, and in good condition at that. Later I found that Tom had found a *Conus kulkulcan.* These finds certainly increased our excitement about the potential of collecting on Roatan's south coast. To boot, there were fine *Bursa granularis cubaniana* (d' Orbigny, 1842) under the rocks and Peggy retrieved a lovely deep purple *Cassis tuberosa* that had just emerged from the sand.

Finally, we visited an area that featured large sand patches amidst the blotches of eelgrass. I spotted a splayed bivalve pair on the bottom, a stunning smooth tellin, *Tellina laevigata* Linnaeus, 1758, bright orange with a yellow border. A welcome relief from the attractive but unexciting *Tellina fausta* Pulteney, 1799, that were considerably more abundant.

### *Reef Encounters of The Rainy Kind*

On our last day we returned to the reef area to the east for a final round. I was soon in "seventh heaven" with another colorful pair of *Tellina laevigata.* After we had been drifting around face down for a bit, somebody pointed out inky black clouds collecting above the mountains. "Uh, oh," I thought, but put my face back in the water to make sure I didn't miss anything before we'd be called back to the boat. Within 15 minutes, I felt raindrops pelting the back of my head. I stood up and could barely see the shore! The boat was a misty mirage as I was enveloped in a silvery glittering shroud of water. I was gratefully and joyously imagining the coalescing of life forces that had brought me to be able to stand in the sea surrounded by a Honduran cloudburst. Soon I brought myself back to reality and realized I should return to the boat so those that didn't have the protection of the warm water could get started back to shore.

### *The End of the Adventure*

Later that day we headed out in the boat once again seeking natives with shells to sell. We chugged up to a fleet of shrimp boats. At first the answer was "no shells." Then, suddenly the captain turned up bearing a number of fine specimens, including a scotch bonnet (*Phalium granulatum* (Born, 1778)) and a large and beautiful red tulip (*Fasciolaria tulipa* (Linnaeus, 1758)), both of which he generously gave us.

We spent the rest of the afternoon cleaning and packing our shells and equipment. Our gracious hosts posed for pictures with us and treated us to a delicious seafood dinner of lobster and shrimp. Next morning we were ready at 5:00 AM to begin our journey home. On that, let it suffice to say that we had another adventure in transit, the stuff of which shell travel legends are made.

After any shell trip I like to reflect on what was particularly significant about what was found. Two themes emerge from this trip. First, we found an amzing variety of species, both macro and micro, in this less publicized part of Roatan. Second, we found a number of endemic subspecies, including the marginellid species, the *Latirus trochlearis,* and the *Murexella chesleri.* While we did not find numerous "K" cones, Tom's *C. kulkukan* was evidence that they were around, perhaps awaiting the next eager sheller who explores Roatan's south by southeast shores.

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6670 Kinsman Road
Pittsburgh, PA 15217-1311
kvander@pitt.edu

# Species List for Roatan Island

| family | genus | species | author |
|---|---|---|---|
| Acmaeidae | *Patelloida* | *pustulata* | (Helbling, 1779) |
| Anatomidae | *Sinezona* | *confusa* | Rolán & Luque, 1994 |
| Arcidae | *Barbatia* | *cancellaria* | (Lamarck, 1819) |
| Arcidae | *Barbatia* | *tenera* | (Adams, 1845 ) |
| Barleeidae | *Barleeia* | *mexicana* | Rolán & Crúz-Abrego, 1998 |
| Buccinidae | *Bailya* | *parva* | (C.B. Adams, 1850) |
| Buccinidae | *Colubraria* | *testacea* | (Morch, 1852) |
| Buccinidae | *Engina* | *turbinella* | (Kiener, 1835) |
| Bullidae | *Bulla* | *occidentalis* | Adams, 1850 |
| Bursidae | *Bursa* | *granularum cubaniana* | (d'Orbigny, 1842) |
| Caecidae | *Caecum* | *lineicinctum* | de Folin, 1879 |
| Caecidae | *Caecum* | *plicatum* | Carpenter, 1858 |
| Caecidae | *Caecum* | *regulare* | Carpenter, 1858 |
| Caecidae | *Caecum* | *sp.* | |
| Caecidae | *Caecum* | *textile* | de Folin, 1867 |
| Caecidae | *Caecum* | *torquetum* | de Folin, 1867 |
| Caecidae | *Meioceras* | *nitidum* | (Stimpson, 1851) |
| Calliostomatidae | *Calliostoma* | *jujubinum* | (Gmelin, 1791) |
| Callistoplacidae | *Callistochiton* | *shuttleworthianus* | Pilsbry, 1893 |
| Cardiidae | *Laevicardium* | *laevigatum* | (Linnaeus, 1758) |
| Cardiidae | *Papyridea* | *soleniformis* | (Bruguière, 1789) |
| Cardiidae | *Trachycardium* | *isocardia* | (Linnaeus, 1758) |
| Cardiidae | *Trachycardium* | *muricatum* | (Linnaeus, 1758) |
| Cassidae | *Phalium* | *granulatus* | (Born, 1778) |
| Cassidae | *Cypraecassis* | *testiculus testiculus* | (Linnaeus, 1758) |
| Cerithiidae | *Cerithium* | *eburneum* | Bruguiere, 1792 |
| Cerithiidae | *Cerithium* | *litteratum* | (Born, 1778) |
| Cerithiopsidae | *Cerithiopsis* | *sp. 1* | |
| Cerithiopsidae | *Cerithiopsis* | *sp. 2* | |
| Cerithiopsidae | *Joculator* | *buijsei* | De Jong & Coomans, 1988 |
| Chamidae | *Chama* | *florida* | Lamarck, 1819 |
| Columbellidae | *Columbella* | *dysoni* | Reeve, 1858 |
| Columbellidae | *Columbella* | *mercatoria* | (Linnaeus, 1758) |
| Columbellidae | *Nitidella* | *nitida* | (Lamarck, 1822) |
| Condylocardiidae | *Carditopsis* | *smithii* | (Dall, 1896) |
| Conidae | *Conus* | *granulatus* | Linnaeus, 1758 |
| Conidae | *Conus* | *kulkulcan* | Petuch, 1980 |
| Coralliophilidae | *Coralliophila* | *galea* | (Dillwyn, 1823) |
| Costellariidae | *Vexillum* | *dermestinum* | (Lamarck, 1811) |
| Costellariidae | *Vexillum* | *moniliferum* | (Adams, 1850) |
| Crassatellidae | *Crassinella* | *lunulata* | (Conrad, 1834) |
| Cryptoplacidae | *Acanthochitona* | *astriger* | (Reeve, 1847) |
| Cryptoplacidae | *Acanthochitona* | *hemphilli* | (Pilsbry, 1893) |
| Cryptoplacidae | *Acanthochitona* | *zebra* | Lyons, 1988 |
| Cryptoplacidae | *Americhiton* | *balesae* | (Abbott, 1954) |
| Cryptoplacidae | *Choneplax* | *lata* | (Guilding, 1829) |
| Cylichnidae | *Acteocina* | *candei* | (d'Orbigny, 1842) |
| Cylichnidae | *Tornatina* | *liratispira* | Smith, 1872 |
| Cypraeidae | *Luria* | *cineria* | (Gmelin, 1791) |
| Cystiscidae | *Gibberula* | *sp.* | |
| Cystiscidae | *Plesiocystiscus* | *sp.* | |
| Cystiscidae | *Pugnus* | *serrei* | (Bavay, 1911) |
| Cystiscidae | *Pugnus* | *sp.* | |
| Fasciolairidae | *Latirus* | *trochelaris* | Kobelt, 1876 |
| Eulimidae | *Eulimostraca* | *sp. 1* | |

| | | | |
|---|---|---|---|
| Eulimidae | *Eulimostraca* | *sp. 2* | |
| Eulimidae | *Vitreobalcis* | *sp.* | |
| Fasciolariidae | *Leucozonia* | *nassa leucozonalis* | (Lamarck, 1822) |
| Fissurellidae | *Diodora* | *cayenensis* | (Lamarck, 1822) |
| Fissurellidae | *Diodora* | *dysoni* | (Reeve, 1850) |
| Fissurellidae | *Diodora* | *jaumei* | Aguayo & Rehder, 1936 |
| Fissurellidae | *Diodora* | *minuta* | (Lamarck, 1822) |
| Fissurellidae | *Diodora* | *sayi* | (Dall, 1899) |
| Fissurellidae | *Fissurella* | *barbadensis* | (Gmelin, 1791) |
| Fissurellidae | *Hemitoma* | *octoradiata* | (Gmelin, 1791) |
| Fissurellidae | *Lucapina* | *aegis* | (Reeve, 1850) |
| Fissurellidae | *Lucapina* | *philippiana* | (Finlay, 1930) |
| Fissurellidae | *Lucapina* | *sowerbii* | (Sowerby, 1835) |
| Fissurellidae | *Lucapina* | *suffusa* | (Reeve, 1850) |
| Haminoeidae | *Atys* | *mandrewii* | Smith, 1872 |
| Haminoeidae | *Atys* | *sp.* | |
| Hipponicidae | *Cheilea* | *equestris* | (Linnaeus, 1758) |
| Hipponicidae | *Hipponyx* | *antiquatus* | (Linnaeus, 1758) |
| Ischnochitonidae | *Ischnochiton* | *erythronotus* | (Adams, 1845) |
| Ischnochitonidae | *Ischnochiton* | *papillosus* | (Adams, 1845) |
| Ischnochitonidae | *Stenoplax* | *floridanus* | (Pilsbry, 1892) |
| Ischnochitonidae | *Stenoplax* | *purpurascens* | (Adams, 1845) |
| Isognomonidae | *Isognomon* | *radiatus* | (Anton, 1839) |
| Lasaeidae | *Erycina* | *periscopium* | Dall, 1899 |
| Limidae | *Ctenoides* | *mitus* | (Lamarck, 1807) |
| Limidae | *Lima* | *caribaea* | (d'Orbigny, 1842) |
| Litiopidae | *Alaba* | *incerta* | (d'Orbigny, 1842) |
| Littorinidae | *Littoraria* | *scabra angulifera* | (Lamarck, 1822) |
| Littorinidae | *Nodilittorina* | *dilatata* | (d'Orbigny, 1842) |
| Littorinidae | *Nodilittorina* | *ziczac* | (Gmelin, 1791) |
| Lucinidae | *Codakia* | *orbicularis* | (Linnaeus, 1758) |
| Lucinidae | *Codakia* | *orbiculata* | (Montagu, 1808) |
| Lucinidae | *Linga* | *pensylvanica* | (Linnaeus, 1758) |
| Lucinidae | *Lucina* | *keenae* | Chavan, 1971 |
| Marginellidae | *Prunum* | *guttatum* | (Dillwyn, 1817) |
| Marginellidae | *Prunum* | *pruinosum* | (Philippi, 1843) |
| Marginellidae | *Prunum* | *roosevelti* | Bartsch & Rehder, 1939 |
| Marginellidae | *Volvarina* | *avena beyerleana* | (Bernardi, 1883) |
| Marginellidae | *Volvarina* | *sp.* | |
| Mitridae | *Mitra* | *barbadensis* | (Gmelin, 1791) |
| Modulidae | *Modulus* | *modulus* | (Linnaeus, 1758) |
| Muricidae | *Dermomurex* | *sarasuae* | Vokes, 1992 |
| Muricidae | *Dermomurex* | *pauperculus* | (C.B. Adams, 1850) |
| Muricidae | *Favartia* | *alveata* | (Kiener, 1842) |
| Muricidae | *Mancinella* | *deltoidea* | (Lamarck, 1822) |
| Muricidae | *Murexsul* | *chesleri* | Houart, 2006 |
| Muricidae | *Muricopsis* | *caribbaeus* | (Bartsch & Rehder, 1939) |
| Muricidae | *Muricopsis* | *deformis* | (Reeve, 1846) |
| Muricidae | *Phyllonotus* | *pomum* | (Gmelin, 1791) |
| Muricidae | *Pterotyphis* | *triangularis* | (Adams, 1856) |
| Muricidae | *Trachypollia* | *nodulosa* | (C.B. Adams, 1845) |
| Naticidae | *Polinices* | *lacteus* | (Guilding, 1834) |
| Neritidae | *Nerita* | *fulgurans* | Gmelin, 1791 |
| Neritidae | *Nerita* | *versicolor* | Gmelin, 1791 |
| Neritidae | *Smaragdia* | *viridis* | (Linnaeus, 1758) |
| Obtortionidae | *Finella* | *adamsi* | (Dall, 1889) |
| Olividae | *Oliva* | *reticularis* | Lamarck, 1810 |
| Olivellidae | *Jaspidella* | *jaspidea* | (Gmelin, 1791) |
| Pectinidae | *Brachtechlamys* | *antillarum* | (Recluz, 1853) |

| | | | |
|---|---|---|---|
| Pectinidae | *Caribachlamys* | *imbricata* | (Gmelin, 1791) |
| Pectinidae | *Caribachlamys* | *mildredae* | (Bayer, 1943) |
| Pectinidae | *Caribachlamys* | *ornata* | (Lamarck, 1819) |
| Pelycidiidae | *Pelycidion* | *megalomastomus* | (Olsson & McGinty, 1958) |
| Phasianellidae | *Tricolia* | *bella* | (M. Smith, 1937) |
| Pinnidae | *Atrina* | *seminuda* | (Lamarck, 1819) |
| Pinnidae | *Pinna* | *carnea* | Gmelin, 1791 |
| Plicatulidae | *Plicatula* | *gibbosa* | Lamarck, 1801 |
| Pyramidellidae | *Odostomia* | *didyma* | (Verrill & Bush, 1900) |
| Pyramidellidae | *Pseudoscilla* | *babylonia* | (C.B. Adams, 1845) |
| Ranellidae | *Charonia* | *variegata* | (Lamarck, 1816) |
| Ranellidae | *Cymatium* | *aquatile* | (Reeve, 1844) |
| Ranellidae | *Cymatium* | *martinianum* | (d'Orbigny, 1846) |
| Ranellidae | *Cymatium* | *nicobaricum* | (Röding, 1798) |
| Ranellidae | *Cymatium* | *femorale* | (Linnaeus, 1758) |
| Rissoidae | *Alvania* | *faberi* | De Jong & Coomans, 1988 |
| Rissoidae | *Manzonia* | *caribaea* | (d'Orbigny, 1842) |
| Rissoidae | *Rissoina* | *dyscrita* | Faber, 1990 |
| Rissoidae | *Schwartziella* | *bouryi* | (Desjardin, 1949) |
| Rissoidae | *Zebina* | *browniana* | (d'Orbigny, 1842) |
| Skeneidae | *Lodderena* | *ornata* | (Olsson & McGinty, 1958) |
| Skeneidae | *Lodderena* | *pulchella* | (Olsson & McGinty, 1958) |
| Sportellidae | *Planktomya* | *henseni* | Simroth, 1896 |
| Strombidae | *Strombus* | *costatus* | Gmelin, 1791 |
| Strombidae | *Strombus* | *gallus* | Linnaeus, 1758 |
| Strombidae | *Strombus* | *pugilis* | Linnaeus, 1758 |
| Tellinidae | *Tellina* | *fausta* | Pulteney, 1799 |
| Tellinidae | *Tellina* | *laevigata* | Linnaeus, 1758 |
| Tellinidae | *Tellina* | *listeri* | Röding, 1798 |
| Tellinidae | *Tellina* | *paramera* | Boss, 1964 |
| Tellinidae | *Tellina* | *radiata* | Linnaeus, 1758 |
| Tornidae | *Anticlimax* | *shumoi* | (Vanatta, 1913) |
| Triphoridae | *Nototriphora* | *decorata* | (C.B. Adams, 1850) |
| Trochidae | *Cittarium* | *pica* | (Linnaeus, 1758) |
| Trochidae | *Tegula* | *fasciata* | (Born, 1778) |
| Trochidae | *Tegula* | *gruneri* | (Philippi, 1849) |
| Trochidae | *Tegula* | *lividomaculata* | (C.B. Adams, 1845) |
| Turbinidae | *Arene* | *cruentata* | (Mühfield, 1829) |
| Turbinidae | *Astralium* | *phoebium* | Röding, 1798 |
| Turbinidae | *Lithopoma* | *tectum tectum* | (Lightfoot, 1876) |
| Turbinidae | *Marevalvata* | *tricarinata* | (Stearns, 1872) |
| Turridae | *Crassispira* | *fuscescens* | (Reeve, 1843) |
| Turridae | *Fenimorea* | *fucata* | (Reeve, 1845) |
| Turridae | *Pilsbryspira* | *albomaculata* | (d'Orbigny, 1842) |
| Turridae | *Pilsbryspira* | *jayana* | (Adams, 1850) |
| Veneridae | *Chione* | *paphia* | (Linnaeus, 1758) |
| Veneridae | *Gouldia* | *cerina* | (C.B. Adams, 1845) |
| Veneridae | *Macrocallista* | *maculata* | (Linnaeus, 1758) |
| Veneridae | *Timoclea* | *pygmaea* | (Lamarck, 1818) |
| Veneridae | *Transennella* | *stimpsoni* | Dall, 1902 |

# Convention Preparations Forge Ahead for "Chardonnay & Shells"

## by Joyce Matthys

Convention preparations are in full swing as the Oregon Society of Conchologists puts the finishing touches on their plans for the 2007 Conchologists of America Convention, Portland, Oregon, August 1-5. The convention registration forms are included in this issue of *American Conchologist* and, when completed, should be sent to the Registration Chairman. Please mail your registration forms prior to July 1st, as there will be a $15 additional charge for persons registering after that date. Early registration will guarantee the field trip of your choice. Room reservations should be made at the Monarch Hotel prior to June 14 to guarantee lodging.

**Donations:** We are seeking donations of shells and shell related items that can be used for door prizes, the silent and oral auctions, and the raffle. **Please note this address change for sending your donations to Duane & Shannon Hann.** If sending them by U.S. Postal Service they should be sent to **P.O. Box 1135, Mulino, OR 97042**. If sending them by UPS, FedEx, etc., they should be addressed to **28603 S Heisinger Lane, Mulino, OR 97042**. Your donation must be received by the Hanns prior to July 1st in order for your donation to be noted in the convention program. If you prefer to bring your donation to the convention, please send a description of your shell or shell related item including the fair market value to the Hanns prior to July 1st. If you have questions their e-mail address is dshann@molalla.net.

Financial donations are also sought to help defray convention expenses. All donations received by July 1st, 2007 will be listed in the program. The three categories of financial contributions are Chardonnay: $10 - $99, Pinot Noir: $100 - $199, and Champagne: $200 and over.

**Workshop & Speakers:** An interesting slate of speakers will highlight the 2007 COA Convention. **Felix Lorenz**, Dr. rer. nat. Germany invites you to bring any cowries that you have had difficulty identifying. He will hold a cowrie identification workshop following his lecture "Identifying Cowries and How to Tell Fakes."

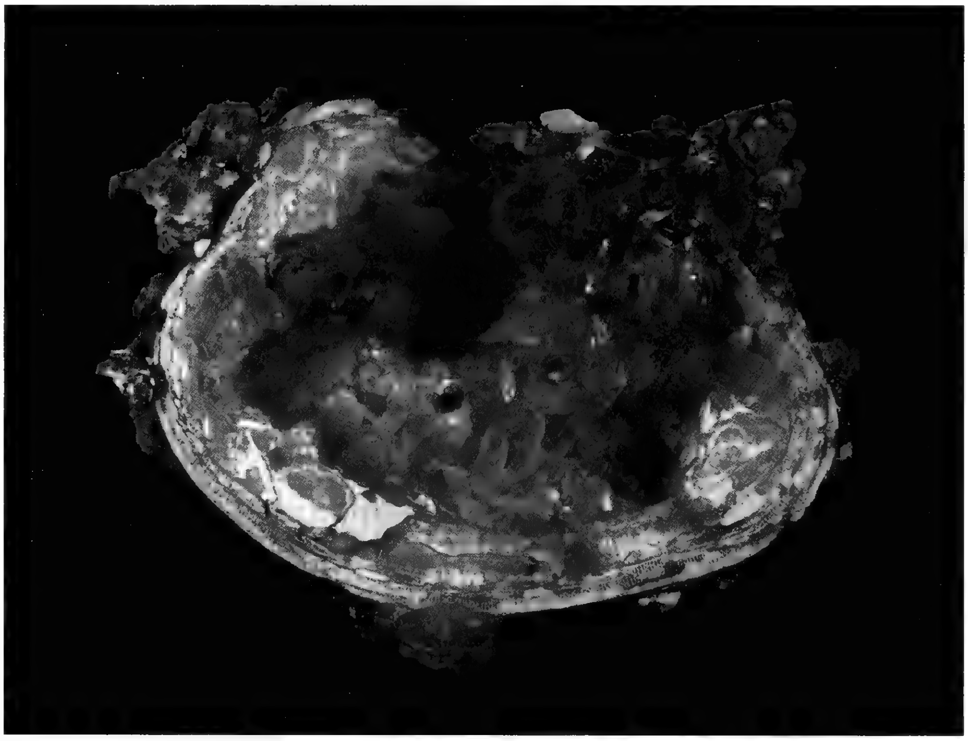
Taylor Shellfish Farm near Shelton, Washington, raises geoducks. Their operation was recently featured in a hilarious episode of The Learning Channel's popular television show "Dirty Jobs." **Bill Dewey** from Taylor Farms will travel to Portland to tell us all about this interesting bivalve.

Other speakers include: **José Leal, Ph.D.**, Sanibel Island, Florida; **Gene Everson**, Louisville, Kentucky; **José Coltro**, São Paulo, Brazil; **Michael Morrissey**, Astoria, Oregon; **David Nisbet**, Willapa Bay, Washington; **David Stick**, Newport, Oregon; **Ray Wilson**, Sublimity, Oregon; **Joyce Matthys**, Salem, Oregon; **Bret Raines,** Oswego, Kansas; **Alice Monroe, Ph.D.,** Clearwater, Florida; **Mark Camara, Ph.D.**, **Chris Langdon, Ph.D.**, and **Ford Evans, Ph.D.**, Newport, Oregon; **Bill Belli**, Redmond, Oregon; **Annie Olson,** Holland, Michigan; **Peggy Williams,** Tallevast, Florida; and our COA President **Hank Chaney, Ph.D.,** Santa Barbara, California.

Lectures will cover a broad range of topics. We will look back in time with "Shells in the Prehistoric Economy of Indigenous People of Western North America" and look to the future with "New Cutting Edge Genetic Tools for Restoring Native Oyster Populations." We will learn about fossils from the Astoria Formation, how genetics and the environment influence shell morphology and color, and even learn what to do with our collections when we die.

This year the banquet speaker will be **Gary Schmelz**, Naples, Florida. Dr. Schmelz will present "Seashell Adventures," a photographic journey to beautiful places with beautiful shells.

The Oregon Society of Conchologists looks forward to seeing you in Portland to celebrate "Chardonnay and Shells."

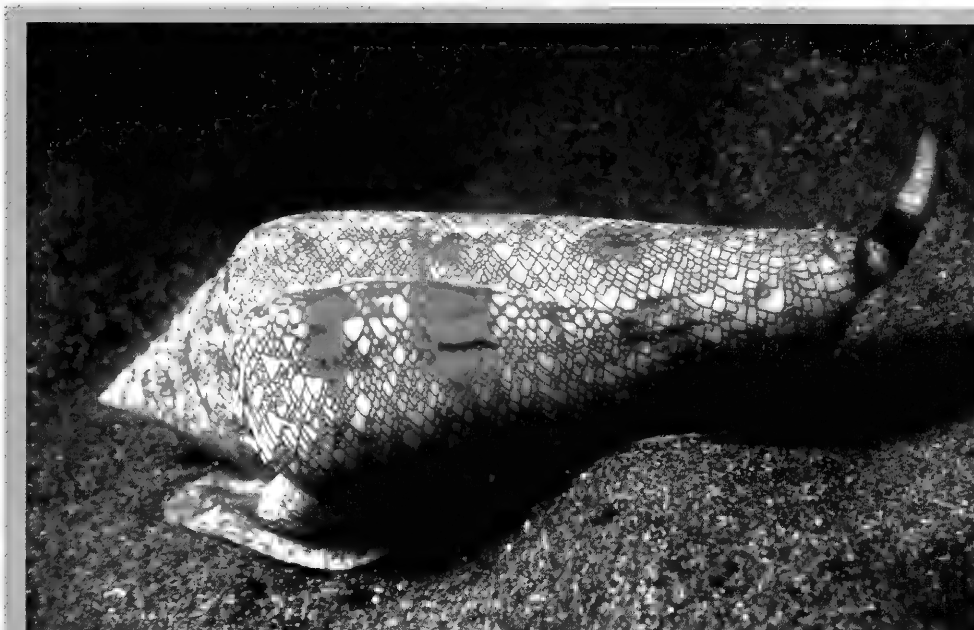


**This beautiful giant Venus clam, *Mercenaria permagna* (Conrad, 1838) with calcite crystals, is one of the raffle items for the 2007 COA convention. It is from Fort Drum Crystal Mine, Okeechobee County, Florida, Nashua Formation (1.8-2.3 million years ago), Pleistocene Period. This prize was donated by Donald Dan.**

# Charles Rawlings and an Encounter with the Glory-of-the-Sea

By Tom Eichhorst

Readers of this magazine have seen the underwater photography of Charles Rawlings before. I have used his photos as both cover images and to enhance various articles. I long ago realized two things about photography. First it is much more difficult than most realize. The images you see in *American Conchologist* by such contributors as Charlotte Thorpe, Peggy Williams, Marcus and José Coltro, Chris Takahashi, Jim Miller, Charles Rawlings and others do not happen with a "point and shoot" effort. There is a true skill and required patience needed to produce a worthy shot. The second thing I have come to realize is that no matter how difficult good photography is, the difficulty multiplies when the subject is a live animal and multiplies exponentially when the animal is photographed under water. So imagine my surprise when Charles Rawlings called and asked if I wanted an image of a living *Conus gloriamaris* Chemnitz, 1777, in its natural environment. To the best of my knowledge this would be the first publication of such a photograph and I quickly said yes.



***Conus gloriamaris*** **Chemnitz, 1777, is no longer the rare and almost absurdly expensive shell it once was, but its rich history ensures that it will continue to hold a place of great prominence in the hearts of shell collectors. According to Dance (1966: 238) this shell was first known in 1757. It was lent to J. H. Chemnitz to be described and he did so in a 1777 publication that included a color illustration. This shell, the holotype, is today in the Museum of Copenhagen. For two centuries the glory cone was considered one of the rarest of shell treasures. To quote Dance, "To see one was a privilege, to hold one an honour, to own one a triumph." Only a handful of these shells were found during the 100 years following their discovery, and not one was found from 1896 to 1957. Until the find in 1957, they were thought extinct. By 1966 and the publication of Dance's *Shell Collecting*, there were 50 known specimens and each (with size, locality, and history) was cataloged in his book. Unfortunately, one of the best stories about this shell was dispelled by Dance. The story of the buyer at an auction who outbid everyone for a *C. gloriamaris* only to crush the shell underfoot after winning (so he would still have the only known specimen) is, according to Dance, not true. Too bad, as it is a great shell story. A last note about this shell, it is the only name for a shell by Chemnitz that is still valid. All of the Chemnitz names (and there were a plethora) were disallowed by the ICZN as non-binominal, but they let stand this one name. Photo by Charles Rawlings.**

Before we get to the story of the shell photograph, I would like to introduce you to Charles Rawlings, III, MD, JD, FACS. Yes, he is both a medical doctor (a neurosurgeon who did his residency at Duke University Hospital) and a lawyer (admitted to the North Carolina Bar in 2002) currently practicing medical law. He has published over 50 articles in medical and legal journals, won over a dozen academic and professional awards, garnered dozens of photography awards, and had his art exhibited in maybe 50 exhibitions. His interests include mountain climbing, SCUBA diving, cross-country running, shell collecting (volutes), reef aquaria, photography, and African cichlids.

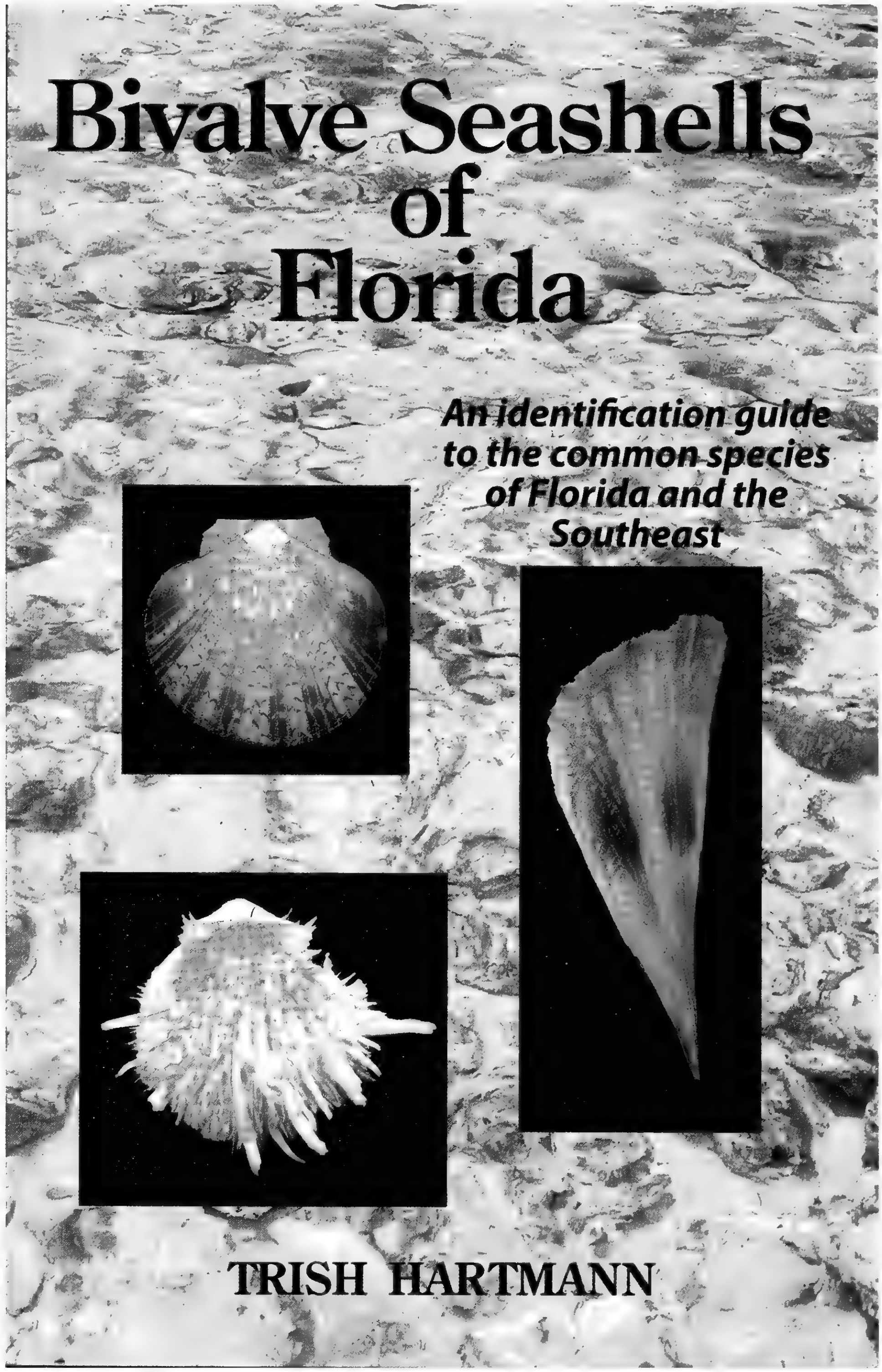
The cover image and the one on this page were taken with a housed Nikon 8008 camera using double strobes, Velvia 50 film, a Nikon 60mm macro lens, F-22 setting and a strobe setting of TTL. The animal was photographed at night in about 60 feet of water. It was actively hunting on a mostly volcanic sand and mud substrate as is evident in the photographs. The shots were taken on the last day of an 11-day trip to the Philippines.

The group on this Philippine trip consisted of Charles, Carl and Denise Ehrlich, and Lynn Murphy. They based out of Negros Island just south of Dumaguette. While in the Philippines they made trips to Balicasag Island, Apo Island, Siquijor Island, and Bohol Island. The most exciting find aside from the *C. gloriamaris* was a living *Cypraea guttata* Gmelin, 1791 (also photographed). The next trip Charles has planned is to Manus Island in New Guinea to trap and photograph the nautiloid species *Nautilus scrobiculatus* Lightfoot, 1786. I for one wish him very good luck.

Book Review:

# Bivalve Seashells of Florida

**By Trish Hartmann**
**5.5 x 8.5 inches, Anadara Press, Tampa FL, 183 pages,**
**ISBN 978-0-9759059-0-6**
**$21.95 (plus $4 handling and shipping) from Andara Press**
**info@anadarapress.com**




This little gem of a book is one of those that after you take it home and start using it you grow to really appreciate just how handy, concise, and helpful it is. Trish Hartman has compiled a book that is useful for the beginner as well as the more advanced shell collector or beachcomber.

The book starts out with a few general chapters such as, "How to Use This Book," "Bivalve Biology," "Human Uses of Bivalves," "Florida Coastal Habitats," and "Shell Collecting." These are short chapters and although primarily there to get a beginner up to speed, they are well worth the few minutes it takes to read through them. Even if you don't learn anything new, it's a great refresher.

The heart of the book is the identification section. There are 27 bivalve families with 167 bivalves species presented. The left-hand page has the text associated with the shell, with common name, scientific name, identification tips, similar species, habitat, range, and comments. The facing right-hand page has a color plate of the species described on the left-hand page. These are some of the best images you will find in a shell book. The images are clear and often come with a magnified inset if a particular feature should be stressed. The printing quality is such that you can magnify an image (for those of us who don't see as well as we used to) and you will still find a high-quality image without graininess or blurring.

The rarer deep-water species are not covered, but if you pick up a bivalve on the Florida coast (or neighboring areas) you can be pretty sure it will be covered in this great little book. Even those species not illustrated are often listed under "similar species" with the key characteristics listed that will differentiate them from the species illustrated. The author has also been extremely careful with systematics. Both the scientific names and the common names used in this book are up-to-date and correct. This book is a worthy addition to anyone's library concerned with identifying Florida bivalves. I highly recommend it.

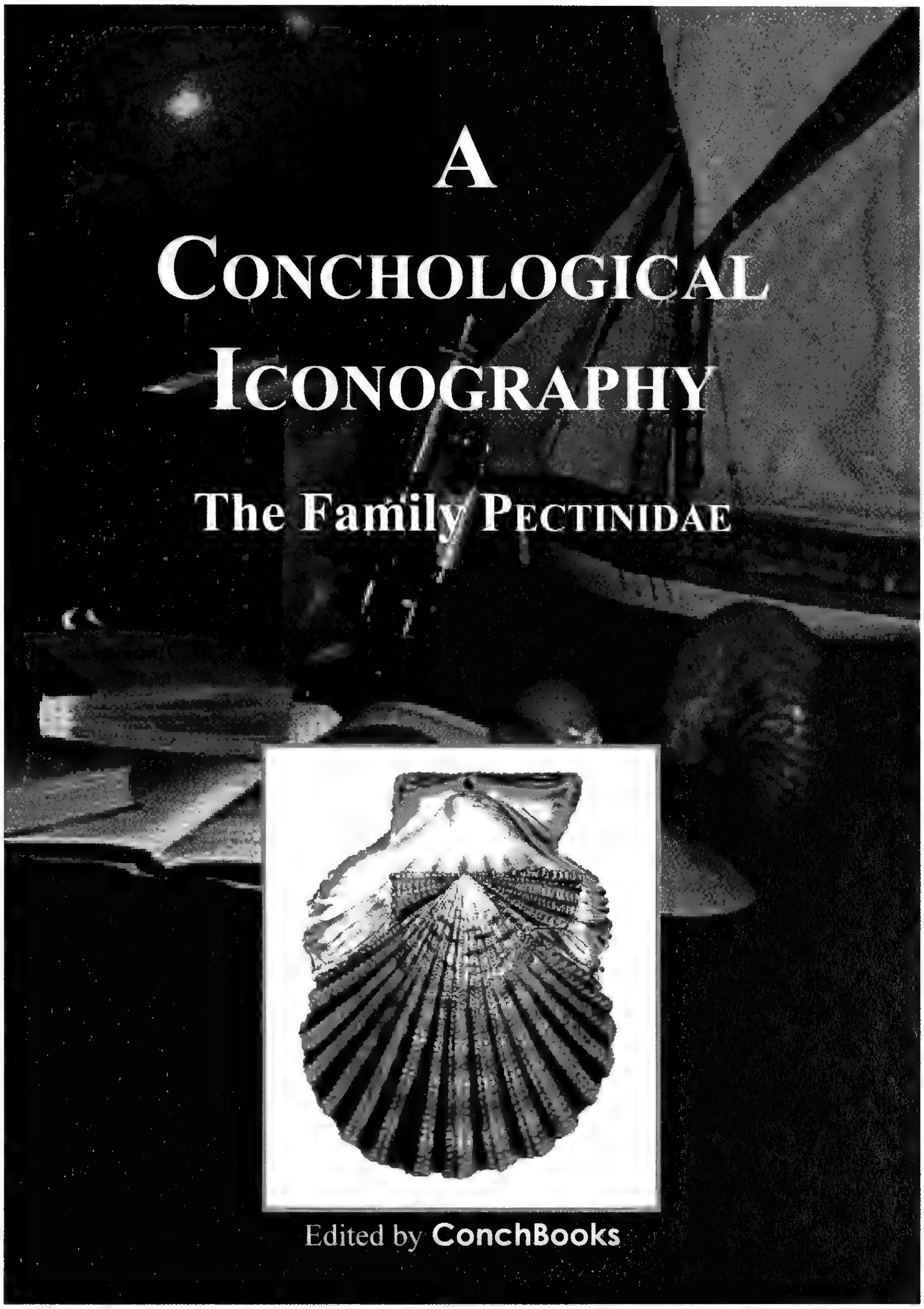
Trish Hartmann is a zoologist, photographer, and longtime member of COA.

Tom Eichhorst
thomas@rt66.com

Book Review:

# A Conchological Iconography: The Family Pectinidae

**By Bret K. Raines & Guido T. Poppe**
**11 x 12.25 inches (binder), Conchbooks, Hackenheim, Germany**
**402 + 320 pages, 242 maps, 320 color plates**
**$364 from www.conchology.be**




"The Family Pectinidae," the "pecten book" of the *Iconography* is finally here! In its own right it is one of the most prodigious works to come out in the shell world in quite some time. For the past three decades there had been so many works on pectens forthcoming but never arriving, with the lone exception of the Rombouts book, published posthumously and admittedly unfinished in 1991. While it was a brave attempt, it suffered from a lot of "unfinished business."

I'll start by saying that I simply cannot overstate that this volume is one of the greatest achievements in shell publications of its kind in recent memory and is a leap forward in organizing the well known but until now completely disorganized world of scallops. The book represents a phenomenal amount of hard labor, prodigious and painstaking research, and careful and thoughtful consideration of the cumulative (and often conflicting) knowledge base that has come down to us from historic research and taxonomy. Add to that a strong dose of good old common sense and the courage to make decisions to get the work done and get it out there for all of us to consider and debate and you have an idea of what this volume entails. If the reader will take the time to study this work, it will shepherd collectors and scientists alike into a newly uncluttered current state of the systematics of this extremely successful, important, and complex family of mollusks.

In the main section the authors present their material in a logical sequence using genera and with species within genera listed alphabetically. Each species description includes the species name, author and date, location of holotype (and if not known, so stated), and type locality (and if not known, so stated and annotated as erroneous if that is obviously the case). The original description is given and translated into English if necessary. Most species accounts have a heading called "Additional Description," which either expands on what is in the original description or gives salient points of the original description. Species range is stated AND a range map exists for each species. Average adult size range is given for all species. There is also a "Remarks" section in most but not all species entries. The nature and content of the remarks vary greatly from entry to entry. There is a "Resource Materials" section that references the most important works on that particular species, listed only by author and year, but expanded in the appropriately large bibliography. Finally, there are black and white photographs, with annotations as appropriate, and a reference to the color plate volume. All of this material appears in the main section of the first volume. A full synonymy for each species is also available, but it

is not found with each species description, but in a special separate index which lists all species alphabetically and in bold, and then lists all known synonymy for each species. If you prefer, there is another whole table of "Invalid Names" for synonymy that lists each and every name ever given to a scallop. The currently valid species name is given for each synonym.

Finally, there are a number of species names for which the authors did not have sufficient evidence to warrant formal placement in the main section. With these names, the authors brilliantly produced a special section, including all such questionable species names and have given as much explanation as they could find about them and justifying their decision to withhold placement of these names until further research can be done.

We then come to the largest section of the work, the volume of color plates. With the photographic illustrations, the entire *Iconography* stands in a category all its own in terms of its excellence. The pecten volumes continue in this outstanding tradition. The photography is of the highest quality and results in beautiful color plates. The authors spared no expense in finding exquisite specimens to show as much as possible the entire breadth of variability for every species. Beyond the beauty of it all, it is possible for perhaps the first time, to visually identify and delineate most species of scallops. As with all other *Iconography* entrants, there is a very helpful pictorial identification guide.

It is at the species level that most of the monumental effort was concentrated in producing this work. The main goal, it seems certain, was to untangle the pectens at the species level and straighten out the taxonomy. In this the authors have done a most admirable job. For the first time we have a well thought out, heavily researched, and comprehensive basis for discussion about pecten species. Readers will be able to identify a significant number of species in their own collections that were held in question.

The approach is straightforward, no-nonsense, and with a good sound dose of common sense. There is no wholesale reincarnation of the family here, no new names, no attempt to reinvent the wheel. The authors' findings are not proscriptive; they are, mercifully and wonderfully, descriptive. They based many decisions purely on the historical records and, using this research, they were painstakingly careful in their own decision making, which in many cases, given the fragmented and conflicting nature of the historical documentation, was absolutely necessary. Countless references and articles were carefully sifted down to a straightforward presentation of 285 pecten species. This work will now stand as the definitive work on 95% of all scallops for some time to come. It is a magnificent accomplishment and if this review is to be considered anything, it is to be considered a big THANK YOU to Brett Raines and Guido Poppe.

I personally have long admired the careful and yet common sense approach to species determination done by the various authors of the *Iconography*. I realize some people disagree with this, and I myself find several somethings to question with each volume. No such work, from any source, is ever either 100% accurate or "complete," as more knowledge comes to light every day. These works must be understood and appreciated as the important milestones that they are, compiling knowledge of the past and situating the subject matter for the next advance in our knowledge.

The physical format of the *Iconography* itself has never been popular in the United States. The very peculiar, strangely engineered, and oversized four ring binders are not kindly disposed toward the material that they house. They don't store well together on the bookshelf with the interior pages squeezed inside and hanging from those rings. In use it is extremely cumbersome to turn pages or to quickly access a particular page or section in the middle of the volume. The pecten book was so voluminous that it filled not one, but two binders. One volume (and therefore binder) is dedicated entirely to the color plates and the second volume contains all written materials, charts, maps, etc. To work with both volumes open at the same time requires an entire tabletop.

Each color photographic plate was given a number, each color illustration was given a number, and of course, each page in the key volume was given a page number. Hence, the reference index, which in this book is the MUST USE navigation tool, becomes a veritable maze of numbers that have to be followed with care. I have to use a ruler to be sure I am using the correct number list for the entry.

Organizationally, the main section of the book is not particularly user friendly. For all but the professional malacologist specializing in pectens, using the index is the ONLY way to find a particular species in question. This is because the book uses a full retinue of genera. Since only a handful of people on earth are totally familiar with all scallop genera, using the table of contents is simply not an option, as it contains only generic names.

Working in detail with the plates can be a bit annoying, gorgeous though they most certainly are. For some reason, all specimens of one species are often not found on the same page. Illustrations of a species are not even necessarily grouped together and can often be mixed in with other species. Just to really make it confusing, many species are found together with very closely related species in configurations that can leave the viewer confused.

In this work, the genera are fully utilized in the organization of the book; however, there is no explanation of the genera themselves. The authors are apparently following several major reference works, particularly Waller, but the information contained in these references as to genera definition and species assignment is not in the present pecten book. Unless you are quite a specialist in the Pectinidae, this omission will lead most amateur pecten lovers to some concern at the sometimes odd assemblages of species under some of the listed genera. Without these explanations we are left simply to ponder, and in some cases seriously doubt, what we are seeing. The inclusion of such material would have probably enlarged the work by possibly a third volume, and as boundaries had to be set somewhere; the absence of this information is understandable and consistent with other *Iconography* volumes.

In total, I find that Bret Raines and Guido Poppe have done a remarkable and laudable job in sorting out a gigantic historical tangle, and for that we shall be eternally grateful. Thank you, gentlemen! Long live the *Iconography*. It has synthesized our collective knowledge of shells to a whole new level, and I, for one, always look forward to the next installment.

Rich Kirk
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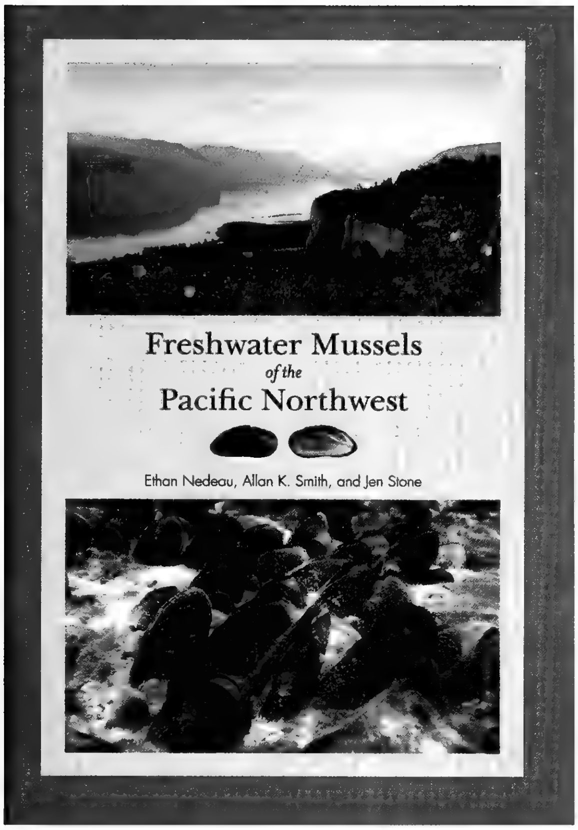


**Book Review:**

## Freshwater Mussels of the Pacific Northwest

**By Ethan Nedeau, Allan K. Smith, & Jen Stone**
**6 x 9 inches, U.S. Fish & Wildlife Service, 45 pages, www.fws.gov/pacific/columbiariver/musselwg.htm**

For those interested in freshwater mussels or unionids, this is probably a must-have book. As there are only a handful of unionid species in the Pacific Northwest, one can understand the limited size of the book (actually more of a pamphlet). With these limitations in mind, the book still stands as a valuable publication.

The authors begin with a generalized discussion of freshwater mussels, including reproduction, shell morphology, role in the environment, conservation, and collecting. They end with a short list of key terms and a key to genera and species of the Pacific Northwest. The species accounts follow, arranged by genus (there are only three: *Anodonta*, *Margaritifera*, and *Gonidea*). They present a fair description of each species, then follow with extensive discussions of distribution, life history, habitat, and conservation. The color plates are quite good and of a fine enough resolution to show minute hinge detail. As both a general introduction to freshwater mussels and as a field guide to the mussels of this area, it admirably serves its purpose. Copies may be obtained at the url listed above.

Tom Eichhorst
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## THE 2007 R. T. ABBOTT VISITING CURATORSHIP

The Bailey-Matthews Shell Museum is pleased to invite applications for the 2007 R.T. Abbott Visiting Curatorship. The Curatorship, established originally in accordance with the wishes of the late Dr. R. Tucker Abbott, Founding Director of the Shell Museum, is awarded annually to enable malacologists to visit the museum for a period of one week. Abbott Fellows are expected, by performing collection-based research, to assist with the curation of portions of the Museum's collection and to provide one evening talk for the general public. The Museum collection consists of marine, freshwater, and terrestrial specimens. A large percentage of our holdings have been catalogued through a computerized database management system; part of the catalogue is already available for searches online at: www.shellmuseum.org/collection.html. A substantial portion of the time will be available for research in the collection, but field work in southwest Florida can be arranged. The R.T. Abbott Visiting Curatorship is accompanied by a stipend of $1,500.

Interested malacologists are invited to send a copy of their curriculum vitae together with a letter detailing their areas of taxonomic expertise and research objectives, and to provide a tentative subject for their talk. Send materials to:

Dr. José H. Leal, Director
The Bailey-Matthews Shell Museum
P.O. Box 1580
Sanibel, FL 33957
jleal@shellmuseum.org

Applications for the 2007 Visiting Curatorship should be sent electronically to the above e-mail address no later than May 30, 2007, or postmarked by that date if sent by regular mail. The award will be announced by mid to late June. Questions about the Visiting Curatorship should be sent to the e-mail address above, or by phone at: (239) 395-2233; fax (239) 395-6706

# The Art of Robert J. Lang

## by Tom Eichhorst (images by the artist)

Robert J. Lang is recognized as one of the world's leading masters of the art of origami, with over 480 designs catalogued and diagrammed. He is noted for designs of great detail and realism, and includes in his repertoire some of the most complex origami designs ever created. All origami is individually handfolded, so most of his art is sold on a commission basis. His commissions are not limited to previous designs, as he states, "If you know what you want, I can probably fold it in origami. He selects his own paper and designs all of his own work. Origami has been likened to music, as an esthetic art with both performing and compositional aspects. He has published folding instructions for about 25% of his designs. Like a musical score, these allow other artists to repeat his compositions.

His work combines aspects of the Western school of mathematical origami design with the Eastern emphasis upon line and form to yield models that are at once distinctive, elegant, and challenging to fold. They have been shown in exhibitions in Paris, New York, Boston, San Diego, and Tokyo. Dr. Lang was the first Westerner invited to address the Nippon (Japan) Origami Association's annual meeting (in 1992) and has been an invited guest at international origami conventions around the world.

Dr. Lang brought the experience learned during a successful career as a physicist and engineer to the art of origami and is one of the pioneers of the cross-disciplinary marriage of origami with mathematics. He is one of very few Western columnists for *Origami Tanteidan Magazine*, the journal of the Japan Origami Academic Society, and has presented several refereed technical papers on origami-math at mathematical and computer science professional meetings. He has consulted on applications of origami to engineering problems ranging from air-bag design to expandable space telescopes.

His art selected here is, of course, mostly of a conchological nature (I threw in a couple of others just for fun), but this is only a small part of what he has accomplished. Some of his work can be seen in Santa Monica, California, where he was commissioned to do several animals reflective of the local environment. The result was a series of origami cast in bronze and installed around various public drinking water fountains. Those so inclined can find the crease patterns of many of Dr. Lang's compositions on his web site. Be forewarned however, to most of us the process between the original piece of paper covered with a maze of fold marks and the final work of art should include as one of the steps, "A miracle occurs here!" To see more of Dr. Lang's art visit: http://www.langorigami.com

Dr. Lang was born in Ohio and raised in Atlanta, Georgia. While pursuing his career as a physicist and engineer, he authored or co-authored over 80 technical publications and 40 patents on semiconductor lasers, optics, and integrated optoelectronics. He has written eight books on origami. He is now a full-time origami artist and resides in Alamo, California.

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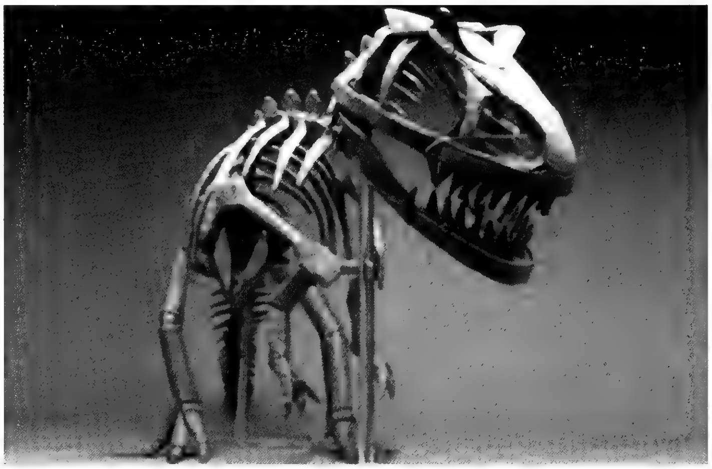
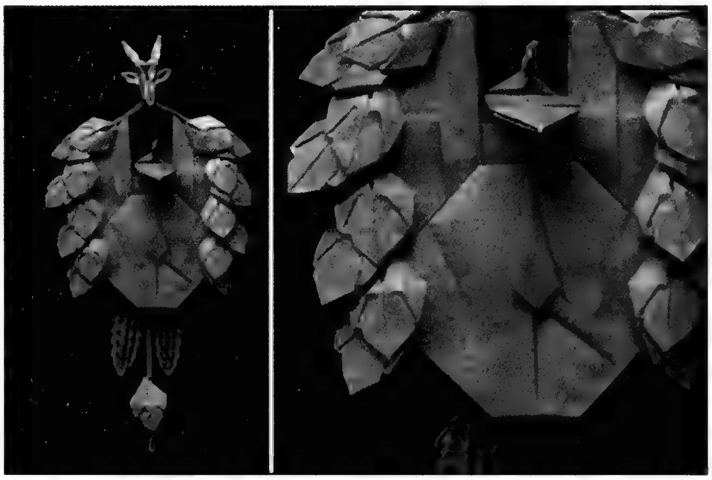
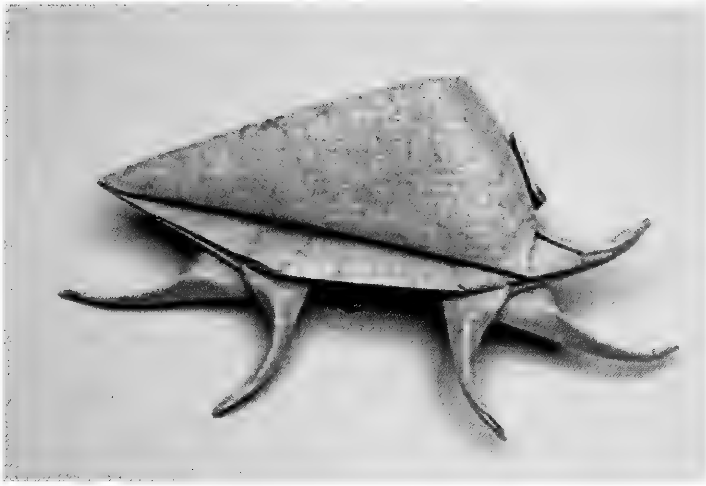
**Goliath Beetle, opus 487, one uncut square of Korean Hanji, size seven inches, 2006 (composed 2006).**



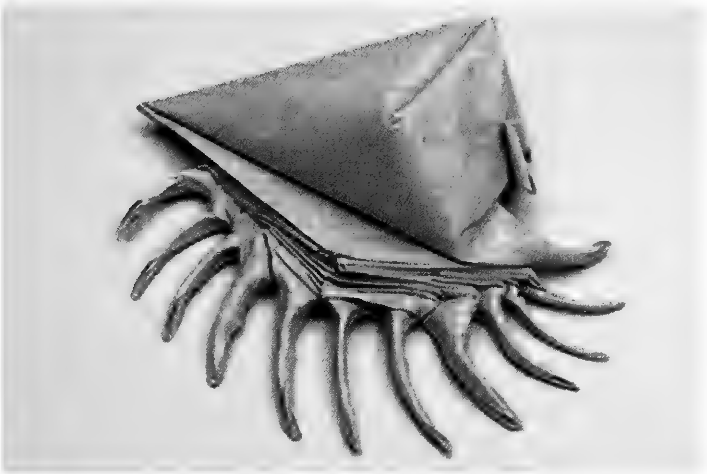
**Allosaurus skeleton, opus 326, 16 uncut squares of Wyndstone "marble" paper, size 24 inches, inspired by the *Tyrannosaurus rex* of the late Issei Yoshino.**



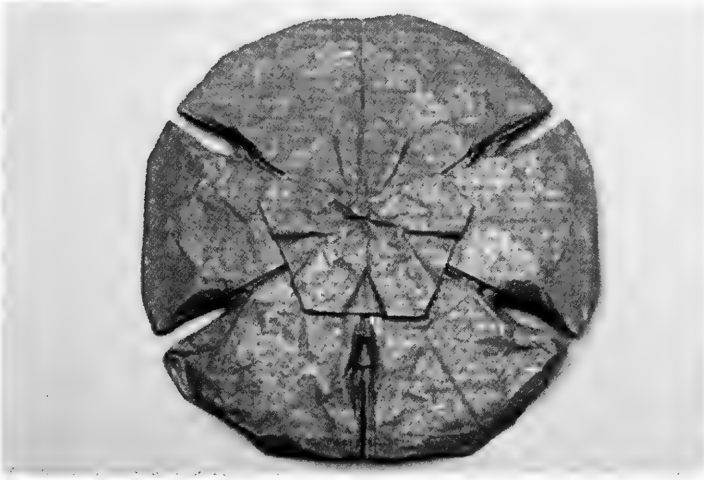
**Black Forest cuckoo clock, opus 182, one uncut 1 x 10 inch rectangle of Zanders "elefantenhaut" paper, size 15 inches, 1987 (composed 1987).**



**Murex, opus 146, one uncut square of Wyndstone "marble" paper, size six inches, 1992 (composed 1987). [*Lambis lambis*]**

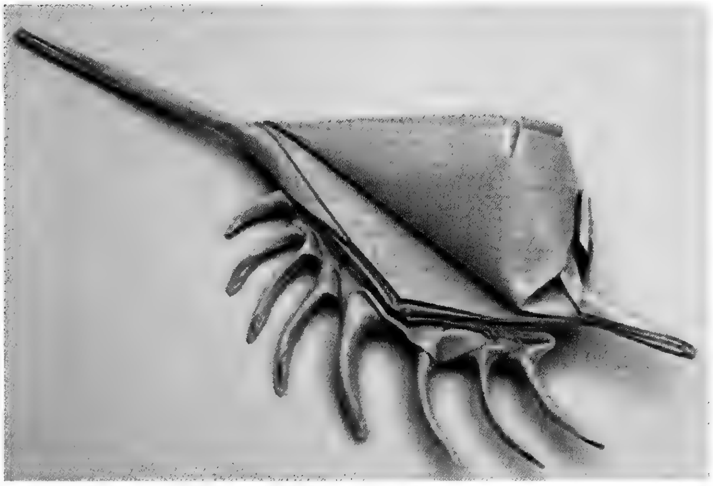


**Flugelschenk, opus 147, one uncut square of watercolor paper, size seven inches, 1992 (composed 1987). [*Lambis millepeda*]**



**Sand dollar, one uncut square of tissue foil, size five inches, 1987 (composed 1987).**

**Hermit crab, one uncut square of kozo paper, size eight inches, 2005 (composed 2005). This design originated after a challenge issued at the 2004 Origami/USA Annual Convention.**



**Spindle murex, opus 156, one uncut square of watercolor paper, 1991. [*Lambis digitata*]**

**Turtle, opus 269, one uncut square of Origamido paper, size five inches, 2002 (composed 1992).**

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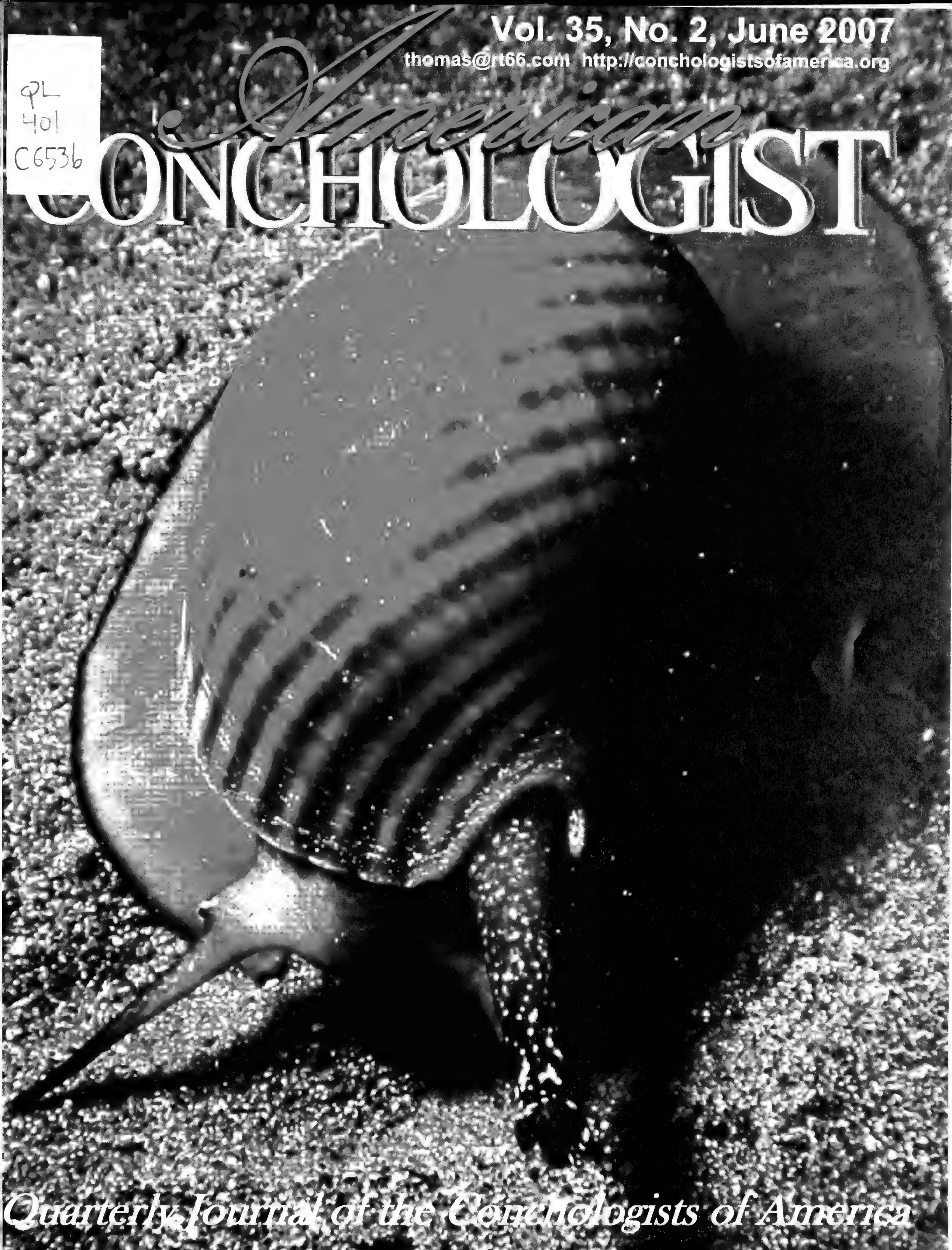
# American CONCHOLOGIST



*Quarterly Journal of the Conchologists of America*

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 35, No. 2** **June 2007**


In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***

## OFFICERS



**Visit the COA website: http://conchologistsofamerica.org. Subscribe to Conch-L, the COA listserver at: listserv@listserv.uga.edu Instructions for joining Conch-L are on the COA web site.**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**Front cover: *Tonna olearium* (Linnaeus, 1758), called the oil lamp tun, photographed at night while it was actively hunting on volcanic sand in 25 feet of water in the Philippines. The photograph was taken with a housed Nikon 8008, an F-22 setting with double strobes, and a Nikon 60mm macro lens. The photograph is courtesy of Charles Rawlings.**

**Back cover: "Alabaster Murex: Ultramarine Blue," an oil painting of *Siratus alabaster* (Reeve, 1845) by Gregory Aquila. The original is 16" x 20" of heat set oils on canvas. It was painted in 2006. Photographed by Jolivette Mecenas. Gregory's work can be seen at: http://www.gregoryaquila.com/**

## Editor's Notes:

I hope everyone enjoys this issue. We start with a piece by Emilio García on a rare collecting expedition to Campeche, west of the Yucatán Peninsula. This area has been closed to collecting and will probably remain so, thus the importance of this latest expedition. Then we have an article on *Notocypraea* by Don Cram. Although he concentrates on a particular species, I found I gained a better understanding of much of the *Notocypraea* complex. Zvi Orlin digs up some more information on "vampiric mollusks," and Tom Grace talks about the microshells found in a bag of sand. We have a book review of a new Peter Dance and Harlan Wittkopf book and highlight some of the year's COA Award winners. Finally, we end with a look at Gregory Aquila and his shell art. All in all, an eclectic mix that should have something of interest to each reader.

As you read this there is very little time left before the annual COA convention. If you haven't already registered, it really is time to send in that money. Registration forms can be found on line at: www.conchologistsofamerica.com in case you lost the forms that were included in the last issue. The Portland folks have set up what looks to be another great convention, with superb speakers and programs and a bourse to satisfy any sheller's needs. If you have never attended a COA convention, you are missing out on a grand time. Everyone wears nametags, so it is easy to meet and greet. All of the people in attendance share an interest in shells, so you are guaranteed to have a ready topic of conversation with someone new you happen to meet. I have truly met some wonderful people at COA conventions who have become friends. So take another look at that schedule for the first week of August.

Changing gears, here is another call for articles and shell images. If anyone knows a shell artist that you believe should be profiled in the magazine, please let me know their name and contact information. In the same vein, if you have considered writing up an article about your favorite shell family, shell genus, shell species, shelling experience, or area of molluscan expertise (for those professionals out there), get busy! I am happy to help with editing (it's what I do) and can often help with color images; either working with what you have (prints, slides, or digital) or maybe adding something from my collection. Our organization has an almost unbelievable amount and extent of knowledge about mollusks spread amongst the membership. American Conchologist is one means of ensuring that knowledge gets out. And thank you to all of those who have contributed or will. There would be no magazine without you.

Tom Eichhorst

# Report on mollusks collected in a dredging expedition to Bahía de Campeche, southwestern Gulf of Mexico

**Emilio Fabián García**

In the 1960s and early 1970s, American shrimpers crossed the Gulf of Mexico on a regular basis to trawl for shrimp in the rich Mexican waters. As a byproduct, many fascinating molluscan species came to light, particularly in the Yucatán area (see García, 1998). The Mexican government stopped giving permits to foreign fishermen, as well as research vessels, in the mid 1970s and, with this embargo, advancing the knowledge of marine life inhabiting the deeper waters of the southern Gulf came to a halt. In the following decades, only foreign ships working in the oil industry have been allowed to work in Mexican waters.

In late 2003 members of the Biology Department at the University of Louisiana at Lafayette (ULL) started procedures to obtain a permit from the Mexican government to study the little-known marine fauna in Bahía de Campeche, southwestern Gulf of Mexico. This would have been a futile task had it not been for the fact that there was an excellent rapport between marine biologists at ULL and their counterparts in Mexican institutions. Moreover, the proposal for the permit allowed for half of the scientific crew to be composed of Mexican nationals. It took will power. It took persistence. It took over a year! But it finally worked.

The expedition had the use of the *R/V Pelican*, a vessel owned and operated by the Louisiana Universities Marine Consortium (LUMCON). We had used this vessel for earlier cruises, some of which have been reported in *American Conchologist* (see García, 1999, 2000, 2002, 2003; and García & Lee, 2002, 2003) and in *The Festivus* (García, 2007). The *R/V Pelican* is a 35-meter vessel with a cruising range of close to 5,000 kilometers. It has 16 berths for the scientific staff and a laboratory area. The dredge is reeled out and pulled in by an A-frame located in the stern of the vessel. The dredge winch can hold from 8,000 to 10,000 meters of cable, depending upon the cable thickness.

The *Pelican* departed from the LUMCON base port at Cocodrie, southwestern Louisiana, at 1:30 a.m. on June 4th, 2005. We sailed all night and woke up in time to do a few dredge hauls on top of one of the now famous Louisiana pinnacles. This particular one has long known to fishermen as Fish Haven. It was an appetizer for the banquet that was coming up. Late that afternoon, after several very successful hauls, we started crossing the big pond towards Progreso, the most important Mexican port in the Yucatán Peninsula and our port of entry. The crossing was rough, and it took the rest of the 4th and all of the 5th of June to get there. No problem. We were all hardened sailors - hardened by Dramamine and such, that is.

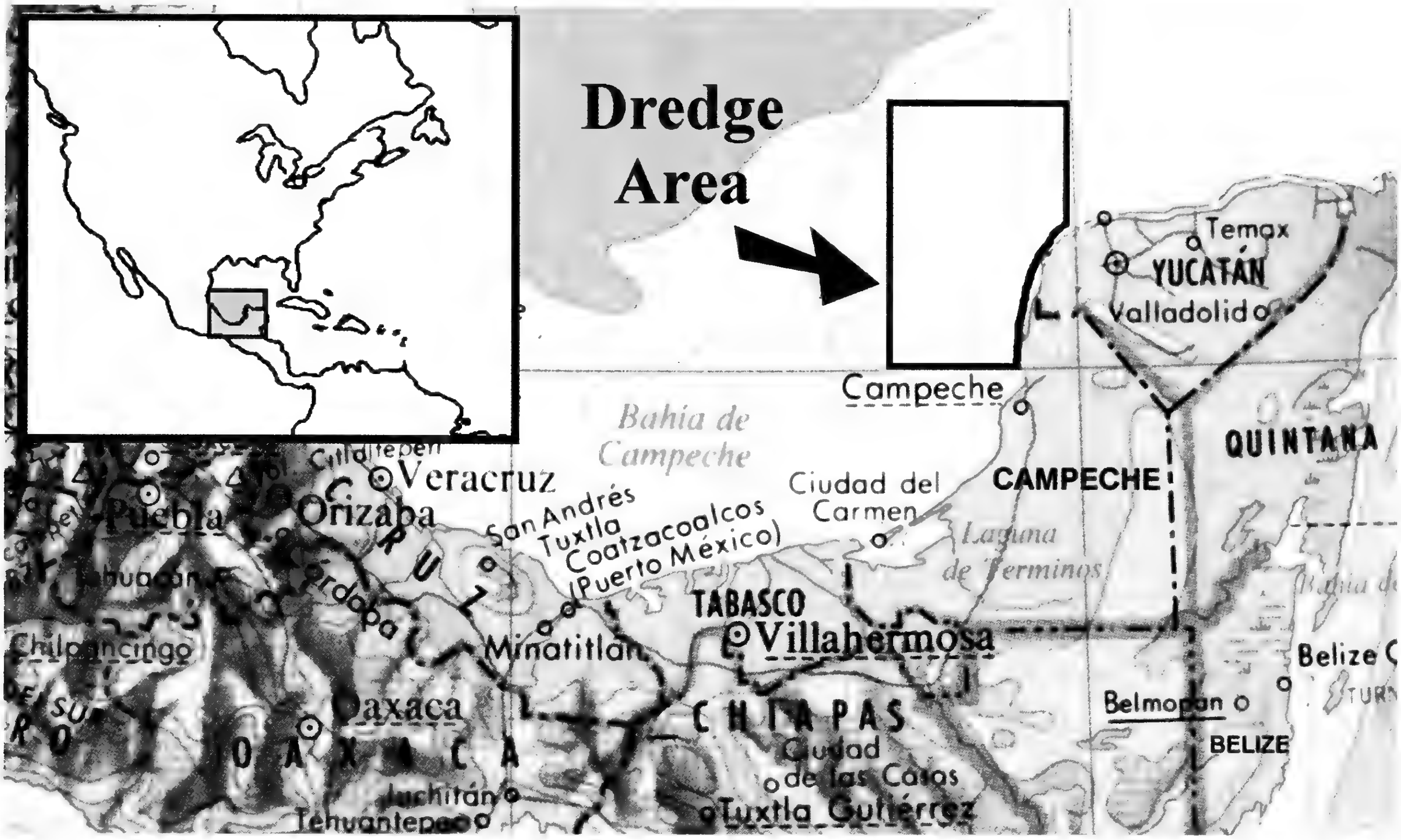
Progreso was a welcome sight. The administrator of the vessel flew ahead to make our arrival as smooth as possible, and customs agents were politely waiting for us at the port. They even let us go into town to have a few "cervezas" after getting hold of our passports. What... a... life!

One of the requisites from the Mexican government was that along with the permit application, the expedition would also submit the exact area where we were going to dredge. This was not only for security purposes, but also because there are many underwater oil fields in the area. So, after leaving Progreso and making a beeline for Bahía de Campeche, it was only a matter of systematically covering the exact area that the expedition's principal investigators had requested and that the Mexican government had approved. Although Mexican fishing boats have worked there for years, only their commercial catch is kept, so the molluscan fauna of the area remains one of the least sampled in the Gulf. Since a primary goal of the expedition was to have a better understanding of the biodiversity of the Gulf of Mexico, we were looking forward to finding out what marine species inhabited Bahía de Campeche.

During this campaign, which lasted from June 4th until June 23rd, 116 dredge hauls were made, totaling some 25 hours of dredging. We sampled roughly from 20ºN to 22º47'N, and from 90º34'W to 92º26'W. Although a few hauls were made in water as shallow as 23m, most were made between 50 and 70m, a few were as deep as 114m, and one was at 350m.

The shallower banks consistently produced the greatest quantity of live specimens, with such key species as *Eucrassatella speciosa* (A. Adams, 1852), *Ctenoides mitis* (Lamarck, 1818), and *Erosaria acicularis* (Gmelin, 1791) showing up in most of these hauls. On the other hand, although rich is crustaceans and algae, the shallower banks were poor in number of species of mollusks. Most of the species collected in the expedition were empty shells extracted from several hundred kilos of sediment dredged in water deeper than 50m. Approximately 440 species of Bivalvia, Scaphopoda and Gastropoda, belonging to 90 families, were collected. Interestingly, no Polyplacophora were obtained. Among the families with the largest number of species were the Turridae (74 spp.), Muricidae (24 spp.), Conidae (16 spp.), Pyramidellidae (15 spp.), Epitoniidae (13 spp.), Fissurellidae (11 spp.), Terebridae (11 spp.), Buccinidae (10 spp.), Triviidae (10 spp.), and Pectinidae (9 spp.). Most of the species are listed below; a figure number appears after those species whose image appears in this report. A number of species with unresolved identification have been omitted.

The previous lack of satisfactory sampling in the Campeche banks is exemplified by the fact that during this cruise we found at least 125 species that had not been recorded for the southwestern quadrant of the Gulf of Mexico (which is limited here to south of 25º00'N latitude and west of 90º00' W longitude). Some of the species collected, such as *Poirieria actinophora* (Dall, 1881) and *Calliostoma orion* Dall, 1889, had been reported in the Gulf only from its southeastern-most limit in the northern Havana province, Cuba, although the later was found alive inside tube sponges at several stations. Moreover, other species, such as




*Spondylus gilvus* Reeve, 1858, *Conus patae* Abbott, 1971, *Attiliosa bessei* Volkes, 1999, and *Lioglyphostoma aguadillanum* Dall & Simpson, 1991, are new records for the Gulf of Mexico. Seven species have been described as new species (see García, 2006a, 2006b), and several others are in the process of being described. The new geographical records, as well as new and undescribed species, have been signified in the list by the use of an asterisk.

The list is in phylogenetic sequence, using alphabetical order within superfamilies for easier handling. To prepare this list I have consulted Bouchet and Rocrois (2005), Rosenberg (2007), and Mikkelsen (2007). Since there is no consensus among workers on the placement of some of the subfamilies traditionally assigned to Turridae, I have kept all of these subfamilies in Turridae; only *Conus* species are listed in Conidae. Also because of lack of consensus, I have listed the cancellariids before Conoidea, not after it, as is suggested elsewhere (Bouchet & Rocroi, 2005: 257).

My thanks to Dr. Fabio Moretzsohn, Harte Research Institute, Texas A & M University- Corpus Christi, for supplying me with the most recent information on molluscan distribution in the Gulf of Mexico, and to Dr. Emily Vokes, Professor Emerita, Tulane University for reading the manuscript and improving its quality. The material for this study is based upon work supported by the National Science Foundation under Grant No. 0315995.

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REFERENCES:

**Bouchet, P. & Rocrois, J.** 2005. Classification and nomenclature of gastropod families. *Malacologia* 47(1-2): 1-397.

**García, E. F.** 1998. Two rare volutes from Yucatán; or a short story of the Golden Age of shelling in the southern Gulf of Mexico. *American Conchologist* 17(3): 3.

**García, E. F.** 1999. New molluscan records for the northwestern Gulf of Mexico. *American Conchologist* 27(2): 27-28.

**García, E. F.** 2000. Surprising new molluscan records from Louisiana and the northwestern Gulf of Mexico. *American Conchologist* 28(3): 5-6, 31.

**García, E. F.** 2002. More discoveries from a collecting expedition off the Louisiana coast. *American Conchologist* 30(1): 6-7, 10.

**García, E. F.** 2003. Unexpected molluscan finds from the hydrocarbon vents off the Louisiana coast. *American Conchologist* 30(4): 28.

**García, E. F.** 2006a. *Conus sauros*, a new *Conus* species (Gastropoda: Conidae) from the Gulf of Mexico. *Novapex* 7(2-3): 71-76.

**García, E. F.** 2006b. Six new species of mollusks (Gastropoda: Cerithioidea, Buccinoidea, Muricoidea) from Bahía de Campeche, southwestern Gulf of Mexico. *Novapex* 7(4): 77-89.

**García, E. F.** 2007. Results of deep-water dredging in the Gulf of Mexico using the "Benthic Skimmer", and report on several geographic extensions, including two species not previously reported in the western Atlantic. *The Festivus* 39(2): 13-18.

**García, E. F. & Lee, H. G.** 2002. Report on molluscan species found in the offshore waters of Louisiana, including many extensions of known range and un-named species. *American Conchologist* 30(4): 10-13.

**García, E. F. & Lee, H. G.** 2003. Report on molluscan species found in the offshore waters of Louisiana, including many extensions of known range and un-named species II. *American Conchologist* 31(1): 26-29.

**Mikkelsen, P.** 2004. Western Atlantic bivalves. URL: http://peet.amnh.org/Western_Atlantic_Bivalves/families/list.html

**Rosenberg, G.** 2007. Malacolog: western Atlantic mollusk species database. URL: http://erato.acnatsci.org/wasp/findsnail.php.

# CAMPECHE LIST OF SPECIES

**BIVALVIA**
**Superfamily: Nuculoidea**
**Family: Nuculidae**
**Ennucula aegeensis* (Forbes, 1844) **(Fig. 1)**
**Superfamily: Nuculanoidea**
**Family: Nuculanidae**
*Nuculana acuta* (Conrad, 1831)
*Nuculana concentrica* (Say, 1824)
*Propeleda carpenteri* (Dall, 1881)
**Superfamily: Mytiloidea**
**Family: Mytilidae**
*Botula fusca* (Gmelin, 1791)
*Lithophaga antillarum* (d'Orbigny, 1853)
*Lithophaga nigra* (d'Orbigny, 1853)
**Superfamily: Arcoidea**
**Family: Arcidae**
*Acar domingensis* (Lamarck, 1819)
*Anadara notabilis* (Röding, 1798)
**Bathyarca glomerula* (Dall, 1881) **(Fig. 2)**
*Cucullearca candida* (Helbling, 1779)
**Superfamily: Limopsoidea**
**Family: Glycymeridae**
*Glycymeris spectralis* Nicol, 1952
**Glycymeris undata* (Linnaeus, 1758)
*Tucetona pectinata* (Gmelin, 1791)
**Superfamily: Pterioidea**
**Family: Pteriidae**
*Pinctada imbricata* Röding, 1798
**Superfamily: Limoidea**
**Family: Limidae**
*Ctenoides mitis* (Lamarck, 1818)
**Ctenoides sanctipauli* Stuardo, 1982 **(Fig. 31)**
*Lima pellucida* (C.B.Adams, 1846)
*Limaria caribaea* d'Orbigny, 1853
*Limatula* species
**Superfamily: Pectinoidea**
**Family: Pectinidae**
*Aequipecten muscosus* (Wood, 1828)
*Argopecten gibbus* (Linnaeus, 1758)
**Bractechlamys antillarum* (Récluz, 1853) **(Fig. 32)**
*Caribachlamys imbricata* (Gmelin, 1791)
**Cryptopecten phrygium* (Dall, 1886) **(Fig. 3)**
**Euvola chazaliei* (Dautzenberg, 1900)
*Euvola raveneli* (Dall, 1898)
**Laevichlamys multisquamata* (Dunker, 1864) **(Fig. 4)**
**Spathochlamys benedicti* (Verrill & Bush, 1897)
**Family: Propeamusiidae**
**Cyclopecten nanus* (Verrill & Bush, 1897)
**Family: Plicatulidae**
*Plicatula gibbosa* Lamarck, 1801
**Family: Spondylidae**
*Spondylus americanus* Hermann, 1781
*Spondylus ictericus* Reeve, 1856
**Spondylus gilvus* Reeve, 1858 **(Fig. 5)**
**Superfamily: Ostreoidea**
**Family: Ostreidae**
*Ostreola equestris* (Say, 1834)
**Superfamily: Lucinoidea**
**Family: Lucinidae**
*Anodontia alba* Link, 1807
*Anodontia schrammi* Crosse, 1876
*Ctena orbiculata* (Montagu, 1808)
*Lucina pensylvanica* (Linnaeus, 1758)
*Lucinisca nassula* (Conrad, 1846)
**Lucinoma atlantis* (R.A.McLean, 1936)
**Pleurolucina leucocyma* (Dall, 1886)
**Pleurolucina sombrerensis* (Dall, 1886)
**Superfamily: Chamoidea**
**Family: Chamidae**
*Arcinella cornuta* Conrad, 1866
*Chama radians* Lamarck, 1819
**Superfamily: Crassatelloidea**
**Family: Crassatellidae**
*Eucrassatella speciosa* (A. Adams, 1852)
**Superfamily: Cardioidea**
**Family: Cardiidae**
*Acrosterigma magnum* (Linnaeus, 1758)
*Laevicardium laevigatum* (Linnaeus, 1758)
*Laevicardium pictum* (Ravenel, 1861)
**Microcardium tinctum* (Dall, 1881)
**Papyridea lata* (Born, 1778) **(Fig. 6)**
**Superfamily: Tellinoidea**
**Family: Tellinidae**
**Angulus probinus* (Boss, 1964)
*Laciolina magna* (Spengler, 1798)
*Macoma tenta* (Say, 1834)
*Merisca martinicensis* (d'Orbigny, 1853) **(Fig. 7)**
**Phyllodina squamifera* (Deshayes, 1855)
*Tellinella listeri* (Röding, 1798)
**Family: Semelidae**
**Abra lioica* (Dall, 1881)
*Semele bellastriata* (Conrad, 1837)
**Family: Solecurtidae**
*Solecurtus cumingianus* (Dunker, 1861)
**Solecurtus sanctaemarthae* d'Orbigny, 1853 **(Fig. 8)**
**Superfamily: Arcticoidea**
**Family: Trapeziidae**
*Coralliophaga coralliophaga* (Gmelin, 1791)
**Superfamily: Veneroidea**
**Family: Veneridae**
*Cyclinella tenuis* (Récluz, 1852)
**Globivenus rugatina* (Heilprin, 1887)
*Gouldia cerina* (C.B.Adams 1845)
*Lirophora clenchi* (Pulley, 1952)
*Macrocallista maculata* (Linnaeus, 1758)
*Pitar fulminatus* (Menke, 1828)
*Pitar morrhuanus* (Dall, 1902)
**Family: Petricolidae**
*Petricola lapicida* (Gmelin, 1791)
**Superfamily: Myoidea**
**Family: Corbulidae**
**Caryocorbula cymella* (Dall, 1881)
*Caryocorbula dietziana* (C.B.Adams, 1852)
**Varicorbula disparilis* (d'Orbigny, 1853)
**Superfamily: Gastrochaenoidea**
**Family: Gastrochaenidae**
*Spengleria rostrata* (Spengler, 1783)
**Superfamily: Hiatelloidea**
**Family: Hiatellidae**
**Hiatella azaria* (Dall, 1881)
**Superfamily: Pandoroidea**
**Family: Thraciidae**
**Cyathodonta rugosa* (Lamarck, 1818)
**Family: Periplomatidae**
**Periploma* cf. *fragile* (Totten, 1835)
**Superfamily: Poromyoidea**
**Family: Poromyidae**
**Poromya rostrata* Rehder 1943
**Family: Verticordiidae**
**Haliris fischeriana* (Dall, 1881)
**Trigonulina ornata* d'Orbigny, 1853
**Family: Cuspidariidae**
*Cardiomya ornatissima* (d'Orbigny, 1853)
**Cardiomya perrostrata* (Dall, 1881)
**Plectodon granulatus* (Dall, 1881)

**SCAPHOPODA**
**Family: Calliodentaliidae**
**Calliodentalium callipeplum* (Dall, 1889)
**Family: Dentaliidae**
*Antalis bartletti* Henderson, 1920
**Dentalium laqueatum* Verrill, 1885
**Family: Laevidentaliidae**
*Laevidentalium liodon* Pilsbry & Sharp, 1897
**Family: Gadilidae**
*Platischides nitidus* Henderson, 1920
**Gadila arctus* (Henderson, 1920)

**GASTROPODA**
**Superfamily: Fissurelloidea**
**Family: Fissurellidae**
*Diodora cayenensis* (Lamarck, 1822)
**Diodora fluviana* (Dall, 1889)
*Diodora jaumei* Aguayo & Rehder, 1936
*Diodora listeri* (d'Orbigny, 1847)
**Diodora sayi* (Dall, 1899)
*Emarginula phrixodes* Dall, 1927
*Emarginula pumila* A. Adams, 1852
*Hemitoma emarginata* (Blainville, 1825)
*Lucapina aegis* (Reeve, 1850)
*Lucapinella limatula* (Reeve, 1850)
**Rimula aequisculpta* Dall, 1927
*Rimula frenulata* (Dall, 1889)
**Superfamily: Trochoidea**
**Family: Calliostomatidae**
*Calliostoma dentatum* Quinn, 1992
*Calliostoma euglyptum* (A. Adams, 1855)
*Calliostoma fascinans* Schwengel & McGinty, 1942
**Calliostoma javanicum* (Gmelin, 1791)
*Calliostoma jujubinum* (Gmelin, 1791)
*Calliostoma oregon* Clench & Turner, 1960
**Calliostoma orion* Dall, 1889 **(Fig. 33)**
*Calliostoma roseolum* Dall, 1881
**Family: Trochidae**
*Dentistyla* cf.*asperrima* (Dall, 1881)
*Lamellitrochus lamellosus* (Verrill & Smith, 1880)
*Solariella lacunella* (Dall, 1881)
*Solariella lubrica* (Dall, 1881)
*Solariella tiara* (Watson, 1879) **(Fig. 9)**
**Family: Liotiidae**
**Arene bairdii* (Dall, 1889)
*Arene tricarinata* (Stearns, 1872)
*Arene variabilis* (Dall, 1889)
**Arene venustula* Aguayo & Rehder, 1936
**Family: Turbinidae**
*Astralium phoebium* (Röding, 1798)
*Turbo cailletii* Fischer & Bernardi, 1856
*Turbo castanea* Gmelin 1791
**Superfamily: Cerithioidea**
**Family: Cerithiidae**
*Cerithium atratum* (Born, 1778)
*Cerithium litteratum* (Born, 1778)

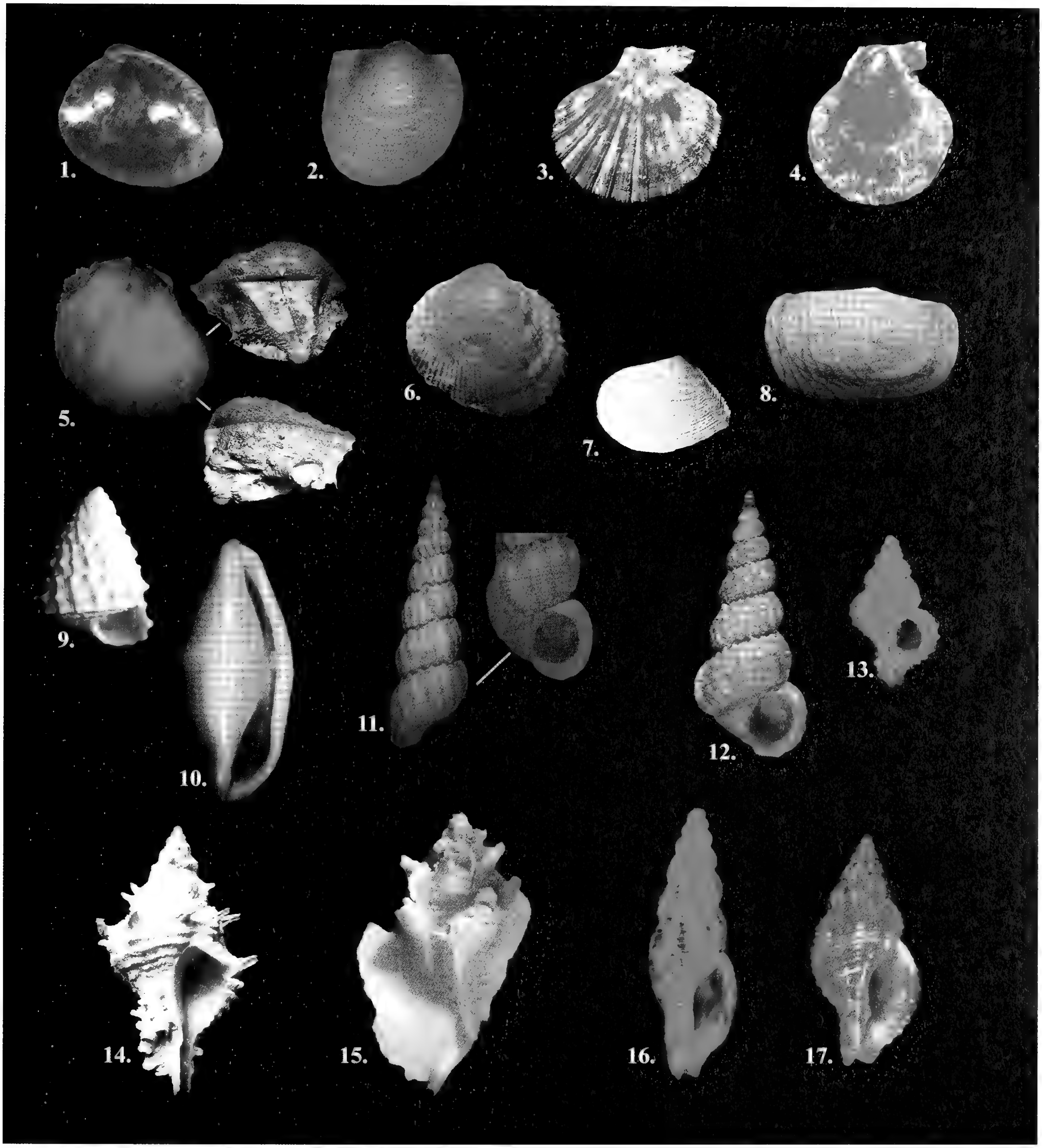
**Family: Litiopidae**
*Alaba incerta* (d'Orbigny, 1841)
*Litiopa melanostoma* Rang, 1829
**Family: Modulidae**
*Modulus modulus (*Linnaeus, 1758)
**Family: Planaxidae**
*Angiola lineata* (da Costa, 1778)
**Family: Scaliolidae**
*Finella dubia* (d'Orbigny, 1840)
**Family: Turritellidae**
*Torcula acropora* (Dall, 1889)
*Torcula exoleta* (Linnaeus, 1758)
**Turritella lyonsi* García, 2006 **(Fig. 34)**
*Vermicularia knorrii* (Deshayes, 1843)
**Superfamily: Rissooidea**
**Family: Rissoidae**
*Folinia* cf. *mottezi* Bavay, 1917
*Microstelma vestale* (Rehder, 1943)
*Rissoina decussata* (Montagu, 1803)
*Rissoina princeps* (C. B. Adams, 1850)
*Rissoina sagraiana* (d'Orbigny, 1842)
**Family: Vitrinellidae**
*Cyclostremiscus beauii* (Fischer, 1857)
*Cyclostremiscus pentagonus* (Gabb, 1873)
*Episcynia inornata* (d'Orbigny, 1842)
**Family: Strombidae**
*Strombus alatus* (Gmelin, 1791)
**Superfamily: Xenophoroidea**
**Family: Xenophoridae**
**Xenophora caribaea* (Petit, 1857)
**Xenophora conchyliophora* (Born, 1780)
**Superfamily: Calyptraeoidea**
**Family: Calyptraeidae**
*Bostrycapulus aculeatus* (Gmelin, 1791)
*Crepidula plana* Say, 1822
*Crucibulum auricula* (Gmelin, 1791)
**Family: Capulidae**
**Trichotropis migrans* Dall, 1881
**Superfamily: Cypraeoidea**
**Family: Cypraeidae**
*Erosaria acicularis* (Gmelin, 1791)
*Luria cinerea* (Gmelin, 1791)
**Family: Ovulidae**
*Cyphoma gibbosum* (Linnaeus, 1758)
**Pseudocyphoma intermedium* (Sowerby I, 1828) **(Fig. 10)**
**Simnialena uniplicata* (Sowerby II, 1849)
**Superfamily: Velutinoidea**
**Family: Triviidae**
*Cleotrivia antillarum* (Schilder, 1922) **(Fig. 36)**
*Cleotrivia candidula* (Gaskoin, 1836)
*Cleotrivia leucosphaera* (Schilder, 1931)
*Dolichupis* n. sp.
*Hespererato maugeriae* (Gray, 1832) **(Fig. 37)**
**Niveria nix* (Schilder, 1922)
*Niveria quadripunctata* (Gray, 1827) **(Fig. 35)**
**Pusula maltbiana* Schwengel & McGinty, 1942
*Pusula* aff. *pacei* Petuch, 1987
*Pusula pullata* (Sowerby, 1870)
**Superfamily: Naticoidea**
**Family: Naticidae**
**Natica menkeana* Philippi, 1851
*Natica perlineata* Dall, 1889
*Naticarius canrena* (Linnaeus, 1758)
*Polinices lacteus* (Guilding, 1834)
*Sinum minus* (Dall, 1889)
*Stigmaulax sulcatus* (Born, 1778)

**Superfamily: Tonnoidea**
**Family: Bursidae**
**Bursa granularis* (Röding, 1798)
**Bursa rhodostoma thomae* (d'Orbigny, 1847)
**Family: Cassidae**
*Sconsia striata* (Lamarck, 1816)
*Semicassis granulata* (Born, 1778)
**Family: Ficidae**
*Ficus communis* Röding, 1798
**Family: Personidae**
*Distorsio clathrata (*Lamarck, 1816)
*Distorsio constricta mcgintyi* Emerson & Puffer, 1953
**Distorsio perdistorta* Fulton, 1938
**Family: Ranellidae**
*Cymatium cingulatum* (Lamarck, 1822)
**Cymatium comptum* (A. Adams, 1854)
**Cymatium krebsii (*Mörch, 1877)
**Cymatium rehderi* A.H.Verrill, 1950
**Family: Tonnidae**
*Tonna galea (*Linnaeus, 1758)
**Superfamily: Pterotracheoidea**
**Family: Atlantidae**
*Atlanta peronii* Lesueur, 1817
**Superfamily: Epitonioidea**
**Family: Epitoniidae**
*Amaea retifera* (Dall,1889)
**Cirsotrema dalli* Rehder, 1945
**Cylindriscala andrewsii* (A. E. Verrill, 1882)
**Epitonium apiculatum* (Dall, 1889)
**Epitonium* cf. *candeanum* (d'Orbigny, 1842)
*Epitonium foliaceicosta* (d'Orbigny, 1842)
*Epitonium krebsii* (Mörch, 1874)
*Epitonium novangliae* (Couthouy, 1838)
**Epitonium striatissimum* (Monterosato, 1878)
**Opalia aurifila* (Dall, 1889) **(Fig. 11)**
**Opalia eolis* Clench & Turner, 1950 **(Fig. 12)**
*Opalia morchiana* (Dall, 1889)
*Opalia pumilio (*Mörch, 1874)
**Superfamily: Eulimoidea**
**Family: Eulimidae**
*Eulima bifasciata* d'Orbigny, 1841
*Melanella jamaicensis* (C. B. Adams, 1845)
*Melanella conoidea* (Kurtz & Stimpson, 1851)
*Melanella eulimoides* (C. B. Adams, 1850)
*Niso aeglees* Bush, 1885
**Niso hendersoni* Bartsch 1953
*Vitreolina arcuata* (C. B. Adams, 1850)
**Superfamily: Triphoroidea**
**Family: Cerithiopsidae**
*Cerithiopsis sigsbeana* Dall, 1881
*Varicopeza crystallina* (Dall, 1881)
*Cosmotriphora melanura* (C.B. Adams, 1850)
**Family: Triphoridae**
*Iniforis longissima* (Dall, 1881)
*Iniforis turristhomae* (Holten, 1802)
*Marshallora nigrocincta* (C.B.Adams, 1839)
*Monophorus ornatus* (Deshayes, 1832)
*Nototriphora decorata* (C.B.Adams, 1850)
*Nototriphora* cf. *decorata* (C.B.Adams, 1850)
*Similiphora intermedia* (C.B. Adams, 1850)
**Superfamily: Muricoidea**
**Family: Muricidae**
**Subfamily: Coralliophilinae**
**Babelomurex mansfieldi* (McGinty, 1940)
*Coralliophila aberrans* (C.B.Adams, 1850)
*Coralliophila caribaea* Abbott, 1958
*Coralliophila galea* (Dillwyn, 1823)

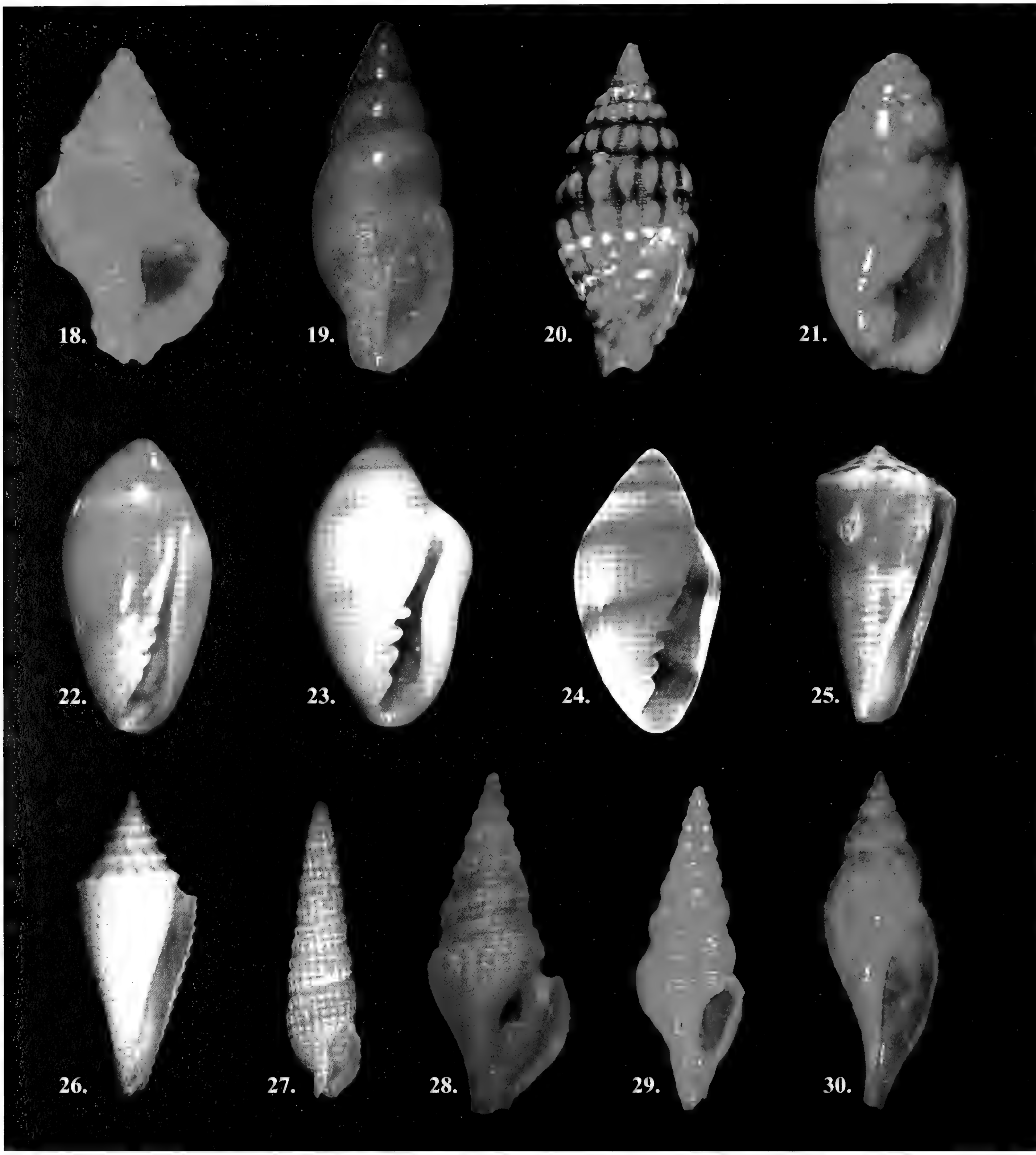
**Subfamily: Ergalataxinae**
*Trachypollia turricula* (von Maltzan, 1884)
**Subfamily: Muricinae**
*Aspella senex* Dall, 1903
**Attiliosa bessei* Vokes, 1999 **(Fig. 18)**
*Calotrophon ostrearum* (Conrad, 1846)
**Calotrophon hystrix* García, 2006 **(Fig. 14)**
**Chicoreus florifer (*Reeve 1846)
*Phyllonotus pomum* (Gmelin, 1791)
**Poirieria actinophora (*Dall, 1881) **(Fig. 38)**
**Vokesimurex anniae* (M. Smith, 1940) **(Fig. 39)**
*Vokesimurex cabritii* (Bernardi, 1859)
*Vokesimurex rubidus* (F. C. Baker, 1897)
**Subfamily: Muricopsinae**
*Favartia cellulosa* (Conrad, 1846)
**Favartia minirosea* (Abbott, 1954) **(Fig. 13)**
**Murexiella glypta* (M. Smith, 1938)
**Murexiella macgintyi* (Redfield, 1852)
*Muricopsis oxytata* (M. Smith, 1938)
**Subfamily: Rapaninae**
*Stramonita* species
**Subfamily: Typhinae**
**Typhinellus sowerbii* (Broderip, 1833) **(Fig. 15)**
**Superfamily: Buccinoidea**
**Family: Buccinidae**
*Antillophos candeanus* (d'Orbigny, 1842)
*Bailya parva* (C. B. Adams, 1850)
*Engina* species
*Engina turbinella* (Kiener, 1835)
*Engina* aff. *turbinella* (Kiener, 1835)
**Monostiolum harryleei* García, 2006 **(Fig. 16)**
**Parviphos adelus* (Schwengel, 1942) **(Fig. 17)**
*Pisania* (?) species
*Pollia tincta* Conrad, 1846
**Family: Columbellidae**
*Columbella mercatoria* (Linnaeus, 1758)
**Cosmioconcha geigeri* García, 2006 **(Fig. 19)**
*Costoanachis scutulata* (Reeve, 1859)
**Nassarina glypta* (Bush, 1885)
*Suturoglypta iontha* (Ravenel, 1861)
*Zafrona* cf. *pulchella* (Blainville, 1829)
*Zafrona idalina* (Duclos, 1840)
**Family: Fasciolariidae**
*Fasciolaria lilium lilium* G. Fischer, 1807
*Fusinus couei* (Petit, 1853)
*Fusinus excavatus* (Sowerby II, 1880)
*Hemipolygona carinifera* (Lamarck, 1816)
**Teralatirus cayohuesonicus* (Sower. III, 1879)
**Family: Nassariidae**
*Nassarius consensus* (Ravenel, 1861)
*Nassarius hotessierianus* (d'Orbigny, 1842)
*Nassarius* cf. *karinae* Nowell-Usticke, 1971
**Family: Melongenidae**
*Busycon coarctatum* (Sowerby I, 1825)
**Superfamily: Volutoidea**
**Family: Mitridae**
*Mitra nodulosa* (Gmelin, 1791)
*Subcancilla* cf. *candida* (Reeve, 1844)
**Family: Costellariidae**
**Vexillum epiphaneum* (Rehder, 1943)
**Vexillum hendersoni* (Dall, 1927) **(Fig. 40)**
**Vexillum* n.sp.
*Vexillum styria* Dall, 1889
**Vexillum sykesi* Melvill, 1925
**Vexillum variatum* (Reeve, 1845) **(Fig. 20)**
**Family: Olividae**
**Subfamily: Olivellinae**
**Jaspidella miris* Olsson, 1956 **(Fig. 21)**

*Olivella watermani* McGinty, 1940
*Olivella stegeri* Olsson, 1956
**Subfamily: Olivinae**
*Oliva circinata* Marrat, 1871
**Oliva formosa* Marrat, 1870
**Family: Cystiscidae**
**Canalispira aurea* García, 2006 **(Fig. 22)**
*Persicula catenata* (Montagu, 1803) **(Fig. 45)**
*Persicula fluctuata* (C. B. Adams, 1850)
**Family: Marginellidae**
*Dentimargo aureocinctus* (Stearns, 1872)
*Dentimargo eburneolus* (Conrad, 1834)
**Dentimargo gibbus* García, 2006 **(Fig. 23)**
**Dentimargo hennequini* Cossig., 2005 **(Fig. 24)**
**Eratoidea hematita* (Kiener, 1834)
**Prunum amabile* (Redfield, 1852)
**Prunum bellulum* (Dall, 1890)
*Prunum carneum* (Storer, 1837) **(Fig. 42)**
*Prunum guttatum* (Dillwyn, 1817)
*Prunum hartleyanum* Schwengel, 1941 **(Fig. 43)**
*Prunum labiatum* (Kiener, 1841) **(Fig. 41)**
*Prunum pruinosum* (Hinds, 1844)
**Prunum rostratum* (Redfield, 1870)
**Prunum* species **(Fig. 44)**
*Volvarina albolineata* (d'Orbigny, 1842)
*Volvarina avena* (Kiener, 1834)
**Superfamily: Cancellarioidea**
**Family: Cancellariidae**
**Agatrix agassizii* (Dall, 1889)
*Axelella smithii* (Dall, 1888)
*Tritonoharpa lanceolata* (Menke, 1828)
**Superfamily: Conoidea**
**Family: Conidae**
*Conus anabathrum* Crosse, 1865
*Conus* cf. *amphiurgus* Dall, 1889
**Conus attenuatus* Reeve, 1844
*Conus cancellatus* Hwass, 1792
*Conus cardinalis* Hwass, 1792
**Conus delessertii* Récluz, 1843
**Conus mindanus* Hwass, 1792
**Conus patae* Abbott, 1971 **(Fig. 25)**
*Conus rainesae* McGinty, 1953
*Conus* cf. *rainesae* McGinty, 1953
**Conus sauros* García, 2006 **(Fig. 26)**
*Conus sennottorum* Rehder & Abbott, 1951
*Conus spurius* Gmelin, 1791
*Conus stearnsii* Conrad, 1869
**Conus stimpsoni* Dall, 1902
*Conus villepinii* Fischer & Bernardi, 1857
**Family: Terebridae**
**Terebra acrior* Dall, 1889 **(Fig. 27)**
*Terebra arcas* Abbott, 1954
*Terebra concava* (Say, 1826)
*Terebra floridana* Dall, 1889
*Terebra glossema* Schwengel, 1942
*Terebra nassula* Dall, 1889
*Terebra protexta* (Conrad, 1846)
**Family: Turridae**
**Subfamily: Clathurellinae**
**Drilliola loprestiana* (Calcara, 1841)
*Glyphostoma epicasta* Bartsch, 1934
**Glyphostoma* cf. *herminea* Bartsch, 1934
**Glyphostoma pilsbryi* Schwengel, 1940
**Nanodiella oxia* (Bush, 1885)
*Nanodiella vespuciana* (d'Orbigny, 1847)
**Subfamily: Cochlespirinae**
*Cochlespira radiata* (Dall, 1889)
*Pyrgospira tampaensis* Bartsch & Rehder, 1939
**Subfamily: Crassispirinae**
*Crassispira fuscescens* (Reeve, 1845)
**Hindsiclava alesidota* (Dall, 1889)
**Hindsiclava macilenta* (Dall, 1889)
*Inodrillia cf. dalli* (Verrill & Smith, 1882)
**Lioglyphostoma antillarum* (d'Orbigny, 1842)
**Lioglyphostoma aguadillanum* (Dall & Simpson, 1901) **(Fig. 28)**
**Lioglyphostoma oenoa* (Bartsch, 1934)
*Lioglyphostoma* species
**Miraclathurella* n.sp.
**Monilispira* species
**Subfamily: Drilliinae**
*Bellaspira pentagonalis* (Dall, 1889)
*Cerodrillia perryae* Bartsch & Rehder, 1939
*Cerodrillia schroederi* Bartsch & Simpson, 1939
*Clathrodrillia albicoma* (Dall, 1889)
*Clathrodrillia* cf. *albicoma* (Dall, 1889)
**Drillia cydia* Bartsch, 1943
**Drillia wolfei* Tippett, 1995 **(Fig. 29)**
*Drillia* cf. *wolfei* Tippett, 1995
**Fenimorea halidorema* Schwengel, 1940
*Fenimorea janetae* Bartsch, 1934
*Leptadrillia cookei* (E. A. Smith, 1888)
*Splendrillia moseri* (Dall, 1889)
**Splendrillia woodringi* (Bartsch, 1934)
**Subfamily: Mangeliinae**
*Bactrocythara asarca* (Dall & Simpson, 1901)
*Brachycythara biconica* (C. B. Adams, 1850)
*Brachycythara galae* Fargo, 1953
*Cryoturris cerinella* (Dall, 1889)
*Cryoturris fargoi* McGinty, 1955
*Glyphoturris* cf. *quadrata* (Reeve, 1845)
*Ithycythara lanceolata* (C.B. Adams, 1850)
*Ithycythara* sp. Alpha
*Ithycythara* sp. Beta
**Kurtziella citronella* (Dall, 1889)
**Kurtziella limonitella* (Dall, 1884)
**Kurtziella serga* (Dall, 1891)
*Platycythara elata* (Dall, 1886)
*Rubellatoma rubella* (Kurtz & Stimpson, 1851)
*Saccharoturris monocingulata* (Dall, 1889)
*Tenaturris inepta* (E. A. Smith, 1882)
**Subfamily: Mitromorphinae**
**Mitrolumna biplicata* (Dall, 1889)
**Subfamily: Raphitominae**
*Daphnella lymneiformis* (Kiener, 1840)
*Daphnella cubana* Espinosa & Fernández- Garcés, 1990
*Daphnella corbicula* (Dall, 1889)
**Daphnella margaretae* Lyons, 1972 **(Fig. 30)**
*Daphnella* sp.aff. *margaretae* Lyons, 1972
*Daphnella retifera* (Dall, 1889)
*Eubela mcgintyi* Schwengel, 1943
*Eucyclotoma cingulata* (Dall, 1890)
*Gymnobela extensa* (Dall, 1881)
*Gymnobela* sp.aff. *leucomata* (Dall, 1881)
*"*Kermia*" n. gen; n. sp.
*Rimosodaphnella morra* (Dall, 1881)
**Subfamily: Strictispirinae**
*Strictispira redferni* Tippett, 2006
**Subfamily: Turriculinae**
**Anticlinura* cf. *atlantica* García, 2005
**Subfamily: Turrinae**
**Gemmula periscelida* Dall, 1889
**Polystira albida* (Perry, 1811)
**Polystira tellea* (Dall, 1889)
*Polystira vibex* (Dall, 1889)
*Polystira* species
**Subfamily: Zonulispirinae**
*Compsodrillia eucosmia* (Dall, 1889)
*Compsodrillia haliostrephis* (Dall, 1889)
*Pilsbryspira albocincta* (C. B. Adams, 1885)
**Pilsbryspira jayana* (C. B. Adams, 1850)
*Pilsbryspira leucocyma* (Dall, 1883)
*Pilsbryspira* cf. *leucocyma* (Dall, 1883)
**Superfamily: Architectonicoidea**
**Family: Architectonicidae**
*Architectonica nobilis* (Röding, 1798)
*Heliacus bisulcatus* (d'Orbigny, 1842)
*Spirolaxis centrifuga* (Monterosato, 1890)
**Family: Mathildidae**
*Mathilda barbadensis* Dall, 1889
*Mathilda* cf. *hendersoni* Dall, 1827
*Mathilda vanaartseni* de Jong & Coomans, 1988
**Superfamily: Pyramidelloidea**
**Family: Pyramidellidae**
**Subfamily: Odostomiinae**
*Odostomia laevigata* (d'Orbigny, 1841)
**Subfamily: Pyramidellinae**
*Houbricka incisa* (Bush, 1899)
*Pyramidella suturalis* H. C. Lea, 1843
*Tryptychus niveus* (Mörch, 1875)
**Subfamily: Turbonillinae**
*Turbonilla* cf. *aequalis* (Say, 1826)
*Turbonilla conradi* Bush, 1899
*Turbonilla* cf. *curta* Dall, 1889
*Turbonilla* cf. *heilprini* Bush, 1899
*Turbonilla* cf. *insularis* Dall & Simpson, 1901
*Turbonilla interrupta* (Totten, 1835)
*Turbonilla portoricana* Dall & Simpson, 1901
**Superfamily: Acteonoidea**
**Family: Acteonidae**
*Acteon candens* Rehder, 1939
*Acteon delicatus* Dall, 1889
**Acteon finlayi* McGinty, 1955
**Superfamily: Bulloidea**
**Family: Bullidae**
*Bulla eburneola* (Dall, 1927)
**Superfamily: Haminoeoidea**
**Family: Haminoeidae**
*Haminoea antillarum* (d'Orbigny, 1841)
**Superfamily: Philinoidea**
**Family: Cylichnidae**
*Acteocina canaliculata* (Say, 1822)
*Acteocina candei* (d'Orbigny, 1841)
*Cylichna verrillii* Dall, 1889
*Scaphander watsoni* Dall, 1881
**Family: Retusidae**
*Pyrunculus caelatus* (Bush, 1885)
**Superfamily: Aplysioidea**
**Family: Aplysiidae**
*Dolabrifera dolabrifera* (Rang, 1828)
**Hypselodoris* species **(Fig. 46)**
*Petalifera ramosa* Baba, 1959
**Superfamily: Cavolinioidea**
**Family: Cavoliniidae**
*Cavolinia tridentata* (Niebuhr, 1775)
*Cavolinia uncinata* (Rang, 1829)
*Clio pyramidata* (Linnaeus, 1767)
*Diacria trispinosa* (Blainville, 1821)

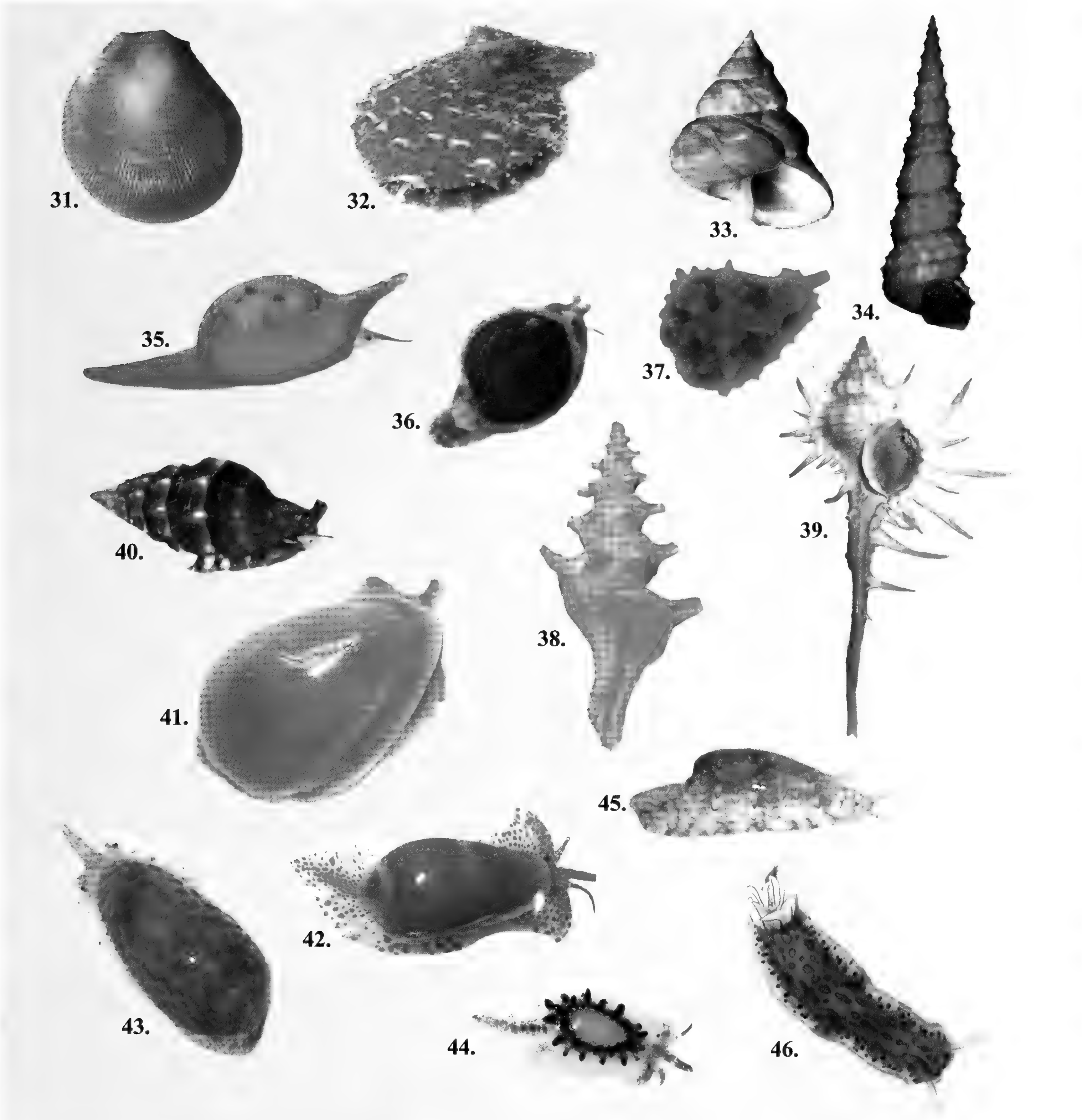
**Editor's note: coordinates for each illustrated species were provided by the author but had to be cut for space considerations. They are available from the editor at thomas@rt66.com.**




1. *Ennucula aegeensis* (Forbes, 1844), 111-116m, 4mm. 2. *Bathyarca glomerula* (Dall, 1881), 350m, 7.1mm. 3. *Cryptopecten phrygium* (Dall, 1886), 111-116m, 52.3mm. 4. *Laevichlamys multisquamata* (Dunker, 1864), 40-50m, 49.5mm (LIVE). 5. *Spondylus gilvus* Reeve, 1858, 49-52 m, 22mm (LIVE). 6. *Papyridea lata* (Born, 1778), 73-77m, 33mm. 7. *Merisca martinicensis* (d'Orbigny, 1853), 77-81m, 11.5mm. 8. *Solecurtus sanctaemarthae* d'Orbigny, 1853, 66-68m, 30mm. 9. *Solariella tiara* (Watson, 1879), 350m, 4.5mm. 10. *Pseudocyphoma intermedium* (Sowerby I, 1828), 84-89m, 23mm. 11. *Opalia aurifila* (Dall, 1889), 93-94m, 5mm. 12. *Opalia eolis* Clench & Turner, 1950, 6.2mm. 13. *Favartia minirosea* (Abbott, 1954), 53-55m, 6.5mm. 14. *Calotrophon hystrix* García, 2006, 28.8mm (HOLOTYPE). 15. *Typhinellus sowerbii* (Broderip, 1833), 77-81m, 19.5mm. 16. *Monostiolum harryleei* García, 2006, 54-56m, 19mm (HOLOTYPE). 17. *Parviphos adelus* Schwengel, 1942, 52-53m, 14mm.




18. *Attiliosa bessei* Vokes, 1999, 50-55m, 14.9mm. 19. *Cosmioconcha geigeri* García, 2006, 107-108m, 6mm (HOLOTYPE). 20. *Vexillum variatum* (Reeve, 1845), 49-54m, 20.6mm. 21. *Jaspidella miris* Olsson, 1956, 51-56m, 6.1mm. 22. *Canalispira aurea* García, 2006, 77-81m, 5.2mm (HOLOTYPE). 23. *Dentimargo gibbus* García, 2006, 107-108m, 5.5mm (HOLOTYPE). 24. *Dentimargo hennequini* Cossignani, 2005, 51-56m, 5mm. 25. *Conus patae* Abbott, 1971, 48-51m, 19.7mm. 26. *Conus sauros* García, 2006, 28-48m, 17.9mm (PARATYPE). 27. *Terebra acrior* Dall, 1889, 93-94m, 8mm. 28. *Lioglyphostoma aguadillanum* (Dall & Simpson, 1901), 73-77m, 13mm. 29. *Drillia wolfei* Tippett, 1995, 73-77m, 13mm. 30. *Daphnella margaretae* Lyons, 1972, 50-55m, 15mm.




**31.** ***Ctenoides sanctipauli*** **Stuardo, 1982, 350m, 26 x 24mm (LIVE). 32.** ***Bractechlamys antillarum*** **(Récluz, 1853), 47-49m, 13mm (LIVE). 33.** ***Calliostoma orion*** **Dall, 1889, 56-57m, 22.2mm (gerontic specimen). 34.** ***Turritella lyonsi*** **García, 2006, 28-48m, 16.5mm (PARATYPE). 35.** ***Niveria quadripunctata*** **(Gray, 1827), 36-46m. 36.** ***Cleotrivia antillarum*** **(Schilder, 1922), 51-56m. 37.** ***Hespererato maugeriae*** **(Gray, 1832), 51-56m. 38.** ***Poirieria actinophora*** **(Dall, 1881), 350m, 14mm 39.** ***Vokesimurex anniae*** **(M. Smith, 1940), 70m, 35mm (LIVE, unusually spiny specimen). 40.** ***Vexillum hendersoni*** **(Dall, 1927), 65-73m. 41.** ***Prunum labiatum*** **(Kiener, 1841), 61-62m. 42.** ***Prunum carneum*** **(Storer, 1837), 20-29m. 43.** ***Prunum hartleyanum*** **Schwengel, 1941, 51-56m. 44.** ***Prunum*** **species, 50-55m. 45.** ***Persicula catenata*** **(Montagu, 1803), 51-56m. 46.** ***Hypselodoris*** **species, 49-52m. Size is not indicated for images of live animals due to variability.**

# *Notocypraea emblema* Iredale, 1931, the forgotten cowry

by

Don Cram (images by the author unless noted otherwise)

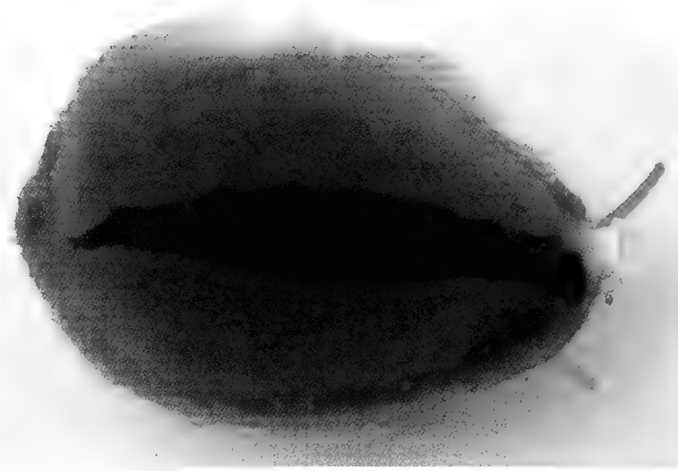
*Notocypraea emblema* Iredale, 1931, was originally described by Iredale as *Notocypraea bicolor emblema* in *Records of the Australian Museum* Vol. 18, p. 220, pl.24, figs. 3-4. The type specimen was trawled alive from 70-90 fathoms off Cape Everard Bank in eastern Bass Strait and the shell and animal were housed in the Australian Museum, Reg. No. C.55769. On the same page Iredale described *Thelxinovum molleri* gen.et sp.nov. (pl.24, figs.17-18) trawled by Captain K. Möller from 45 fathoms off Twofold Bay, New South Wales (NSW), and the shell only was housed in the same institution, Reg. No. C.57767.

Iredale gave no reason for describing *N. emblema* as a subspecies of *N. bicolor*, but in 1935 in a subsequent paper accepted it as a valid species more related to *N. angustata* (Gmelin, 1791). He erected the new genus *Thelxinovum* for *T. molleri* on the basis of an elevated spire. Iredale's classification was followed in Joyce Allan's 1956 publication *Cowry Shells of World Seas.* In his 1962 review of *Notocypraea* R.J Griffiths accepted both *N. emblema* and *N. molleri* as valid species but rejected *Thelxinovum* as not being generically significant. F.A Schilder in his 1964 review listed both *N. emblema* and *N. molleri* as forms of *N. angustata* and most reviewers have accepted this classification, although some collectors have loosely applied the name *N. molleri* to various species of *Notocypraea.*

The holotype of *N. emblema* is 27.3x18.1x15.3mm (length to width to height) with 26 labial and 21 columellar teeth. The shell is white with no trace of dorsal bands and has about 30 medium to large brown spots on the labial side with about 10 on the opposite side. The labial side is considerably constricted forward. The holotype of *N. molleri* is 25.5x15.7x13.3 with 28 labial and 23 columellar teeth, with numerous brown spots on both labial and columellar sides and the dorsum is creamy white. I have personally examined both specimens and both holotypes are illustrated.

My discovery of a number of specimens from the Bass Strait area that were difficult to identify morphologically led to an extensive study of shell animal and radulae of typical specimens of two species with which these specimens could be confused: *Notocypraea angustata* (Gmelin, 1791) (range, Southern NSW to Pt Lincoln, South Australia; Bass Strait; and Tasmania) and *Notocypraea declivis* (Sowerby, 1870) (range SE of South Australia, western Victoria, Bass Strait, and Tasmania). The results were then compared with the shell and radula of the holotype of *N. emblema* and also a number of hard to identify specimens from both deep-water and littoral areas of Victoria, South Australia, Tasmania, and the Bass Strait area.

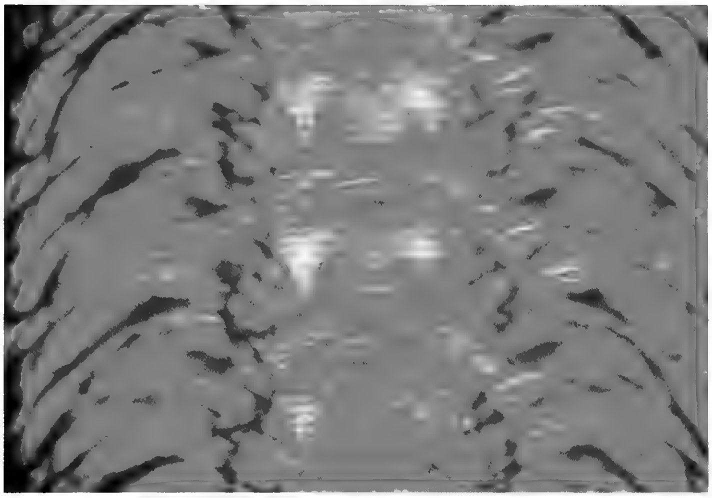
Typical shells of *N. angustata* and *N. declivis* have a similar length to width and height ratio, weight to length ratio, and tooth count, but are normally easy to identify morphologically by their dorsal pattern and are well illustrated and described in various cowry publications. *N. angustata* usually has a very dark brown unbanded dorsum with both columellar and labial sides heavily spotted, although specimens from the Port MacDonnell area are usually very pale. *N. declivis*, with its heavily spotted dorsum, is a prized shell for collectors but these shells can become confusing when these spots are minimal or absent.



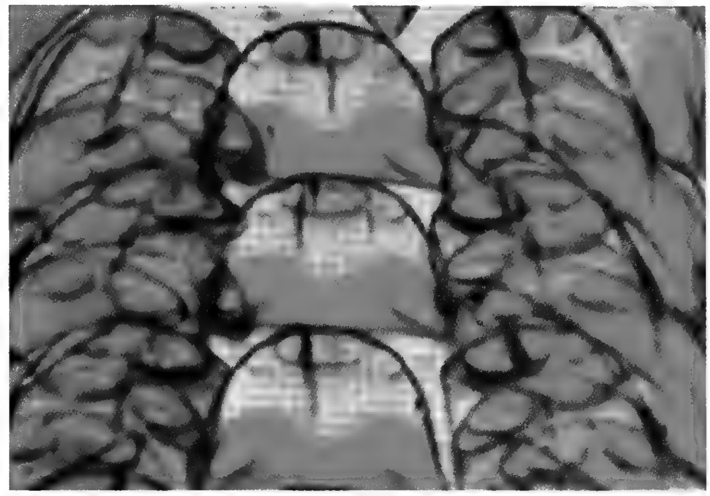
**_Notocypraea angustata_ (Gmelin, 1791), about 19mm, collected intertidally. Specimens from Victoria are usually dark brown when collected but lose their color shortly after being cleaned and end up a reddish blue. This specimen from Cape Liptrap shows the brown dorsum, the red tentacles, and the white siphon. The mantle and some of the underside of the foot (paler than the upper side which is dark like the shell) can also been seen. Port MacDonnell specimens are usually much lighter.**

The color of the animal of *N. angustata* is usually similar to the dorsum color of the shell, varying from dark brown to pale fawn or even red. The siphon is always white and the tentacles are dark red. The animal of *N. declivis* is pale fawn, the tentacles are pale red or apricot, and the siphon is white. The radula of *N. angustata* is unique to the genus and a study of 21 radula mounts from various areas of Victoria, South Australia, and Bass Strait found only minimal variation. The central tooth is large and almost semicircular, much wider than it is high (see table). At the top of the tooth there are three prominent central cusps and one small cusp on either side. The sharp prominent basal denticles that are features of all other species of *Notocypraea* are replaced with an oblique oval rounded ridge in both lower corners of the tooth. The teeth do not overlap as they do with *N. comptonii* (Cram, 2006), but are usually separated. The radula of *N. declivis* was first illustrated by Vayssiere in 1923. The central tooth is almost square; with five cusps (as in *N. angustata*), but both lower corners of the tooth have prominent slightly oblique sharp denticles. The teeth do not usually overlap. The study of 21 radula mounts of specimens mainly from Port MacDonnell and Tasmania also found variation was minimal.

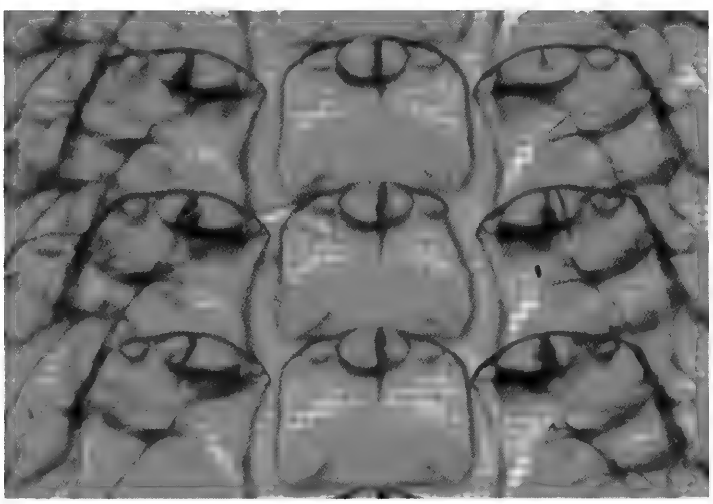
In 1959, prior to his 1962 review, Griffiths mounted the radulae in euparal of both the holotype of *N. emblema* and a specimen in the collection of Museum Victoria labeled *N. molleri*,



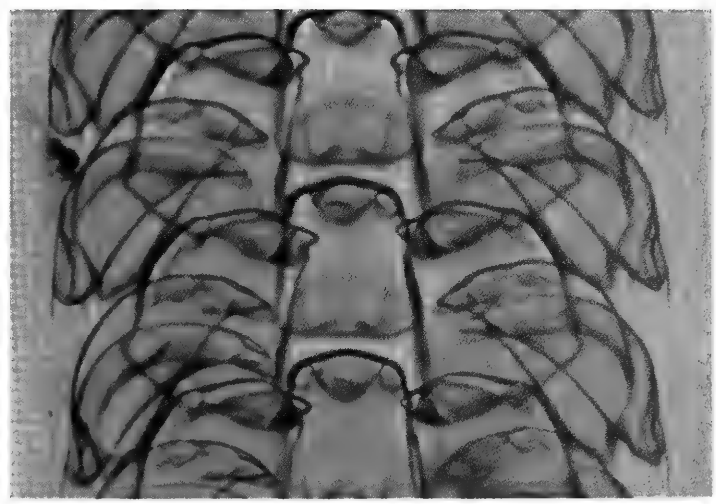
*N. angustata* (F. 120542, Museum Victoria) radula. This optical microscope image is from a specimen from Cape Liptrap, S. Australia. It shows the semicircular shape of the central tooth, which is wider than it is high and has three prominent central cusps on the top and one small cusp on either side.



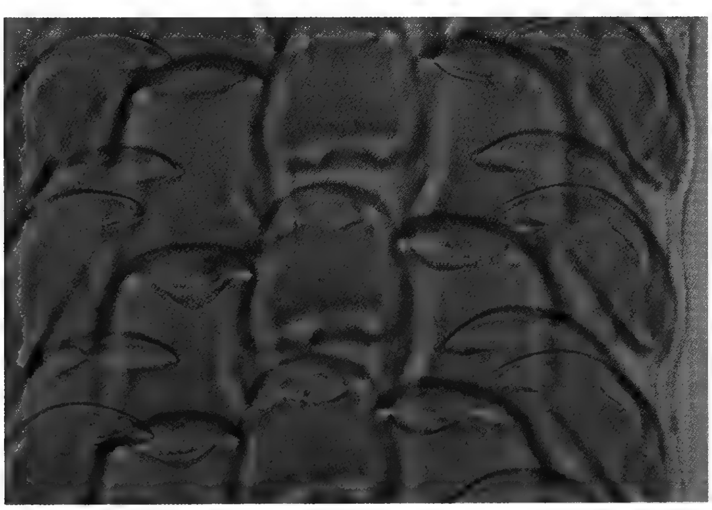
*N. angustata* (C. 92, author's collection) radula from a specimen from Cape Liptrap, S. Australia. The sharp basal denticles found on the central tooth of other *Notocypraea* are replaced with an oblique rounded ridge on the lower corners of the tooth.



*N. declivis* (C. 182, author's collection) radula with a square central tooth and oblique denticles on the lower corners common to all *Notocypraea* except *N. angustata*. The central tooth shown as it looks at 90 degrees or perpendicular to the radula.



*N. sp. x* (C. 120, author's collection) radula from a specimen from Port MacDonnell, S. Australia. The elongate shape of the central tooth and the narrowly placed basal denticles are similar to those described for *N. molleri*.



Left: *N. emblema* (holotype, C. 57769) radula showing the squared central tooth and the large basal denticles that extend below the lower edge of the tooth. Photo by Chris Rowley.

Right: A close-up of the same *N. emblema* providing a more detailed look at the central tooth. This is from the shell collected off Cape Everard Bank in eastern Bass Strait, S. Australia.

Reg No. F.20865, which was trawled from 60-65 fathoms off Gabo Island in eastern Bass Strait. It was on the basis of differences in the central tooth structure of these radulae that he accepted both as valid species. The radula of the holotype of *N. emblema* has a very large, almost square, central tooth with two prominent denticles at the base of the tooth, situated toward the center, which extend below the base of the tooth. The central tooth of specimen F20865 is also squarish in shape, but was distinguished from *N. emblema* by the lack of basal denticles by Griffiths, describing this area as a ridge. Critical examination of this radula, however, found it to have centrally placed basal denticles, but not as prominent as those of *N. emblema,* (both illustrated). For many years I regarded these two specimens to be conspecific, not related to *N. angustata*, but more likely to be forms of a vary variable *N. declivis.*

At Port MacDonnell, South Australia, there is a small nondescript shell (I will call species X), 18-22mm with a plain creamy white dorsum and reddish spots on both the labial and columellar margins. The animal is similar in the coloring of both tentacles and siphon to *N. declivis* and lives sympatrically with that species. For many years this shell has been a puzzle for collectors and has been regarded as a result of interbreeding or just an aberration. In 1973 I collected two specimens of this shell and noted a significant radular difference from typical specimens of *N. declivis,* but thought this to be due to *N. declivis* having a radula that varies considerably (Cram 2005). Over the next 20 years I collected a further 9 specimens and a recent study of these found that they all had a radula with a squarish, sometimes elongated central tooth, with centrally placed basal denticles.

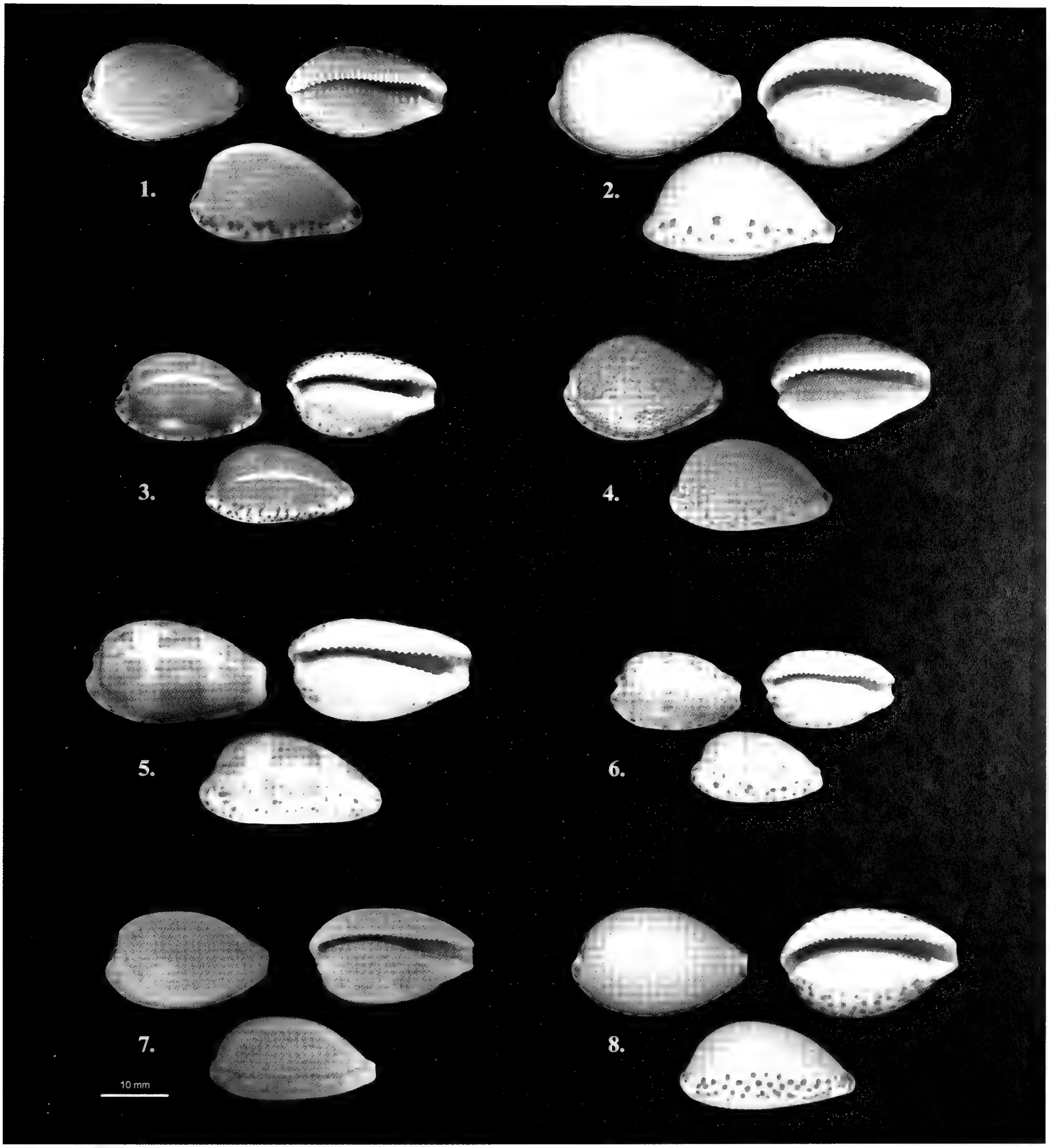
An examination of a number of dry shells and some radulae from near the type locality of *N. emblema* and many deep-water areas in Bass strait and Tasmania, found specimens that, although varying in shell size, dorsal color, and radula size from the Port MacDonnell species X and *N. emblema*, had the same radular form. I now believe with respect to their radulae, that they are all a form of the very variable *N. emblema.* This research was recently confirmed when I discovered four preserved specimens in an unidentified lot in Museum Victoria, obtained from 35 fathoms when lifting the Bass Strait cable in 1910. Of three identical specimens, a radula was extracted from one, Reg. No F113604, and it proved to be conspecific with species X. The fourth specimen, Reg. No F120542, was confirmed by the radula to be a very lightweight *N. angustata.* A small piece of radula obtained from dried up animal residue from a specimen 28.3 x 18.3 x 14.2mm (illustrated), trawled from 140 fathoms off Lakes Entrance, Victoria, from the collection of Coralie and Max Griffiths, who own the internationally acclaimed Shell Museum at Lakes Entrance, also has the *N. emblema* or species x radula form.

Another feature noted during the study was that two cusps on the inner and outer radular marginal teeth of *N. angustata*, *N. declivis* and *N. comptonii* are equidistant from the tip of the teeth, whereas on *N. piperita*, *N. pulicaria*, the holotype of *N. emblema* and specimens of species X, the cusps on the inner marginal are closer to the tip than those on the outer marginal.

One thing is for certain, *N. emblema* is not related to either *N. angustata* or *N. declivis*. I now believe it to be a valid species that has a very variable shell and radula, but the radular variation does not fall within the parameters of either *N. angustata* or *N. declivis.* The holotype of *N. emblema,* species X, and all its variants, have centrally placed basal denticles, whereas *N. angustata* has none and the basal denticles of *N. declivis* are situated obliquely towards the outer corners. The radulae of *N. emblema* and its variants could be considered similar to *N. piperita*, but are widely variable in size (see table), which is not so with *N. piperita*, and the shells cannot be confused with this species (see table).

| Species | N | Shell Length Mean | Shell Length Max Min | Radula Length | Radula Ribbon Width | Central Tooth Basal Denticles | No. of Rows | Rows per mm | Central Tooth Length | Central Tooth Width |
|---|---|---|---|---|---|---|---|---|---|---|
| *N. angustata* all areas, littoral and deep-water | 21 | 27.1 | 32.9 22.9<br>2.8 | 12.4<br>2.2 | 701<br>77.6 | none | 90<br>10.9 | 7.2<br>1.0 | 138<br>17.8 | 202<br>32.4 |
| F120542 *N. angustata* Bass Strait, deep-water MV 35 fthms | 1 | 25.2 | – | – | 680 | none | 57* | 7.0 | 136 | 210 |
| *N. declivis* Pt. MacDonnell, SA | 15 | 24.8 | 26.9 22.3<br>1.5 | 13.9<br>.8 | 636<br>79 | toward corners oblique | 98<br>12.7 | 7.2<br>1.9 | 139<br>17 | 146<br>15.5 |
| Species **X** cf. *N. emblema* Pt. MacDonnell, SA | 11 | 21.46 | 23.4 20.0<br>1.1 | 10.3<br>2.4 | 580<br>119 | centrally placed | 71<br>9.0 | 7.3<br>1.8 | 131<br>29.4 | 129<br>26.5 |
| C57769 *N. emblema* Holotype AM | 1 | 27.3 | – | – | 900 | centrally placed | 50* | 4.6 | 218 | 210 |
| F20865 cf. *N. emblema* Off Gabo Is., deep-water MV | 1 | 25.1 | – | – | 616 | centrally placed | 60* | 6.3 | 160 | 150 |
| F113604 cf. *N. emblema* Bass Strait, deep-water MV 35 fthms | 1 | 23.5 | – | – | 570 | centrally placed | 56* | 5.8 | 145 | 125 |
| *N. piperita* all areas littoral and deep-water | 37 | 22.3 | 26.0 17.0<br>2.2 | 8.2<br>1.0 | 421 | centrally placed | 79<br>10.0 | 9.5<br>1.1 | 96<br>8.8 | 95<br>8.9 |

**N = Number of specimens examined. Mean shell and radula lengths are shown in mm. Mean radula width and central tooth length and width are shown in microns. Standard deviation is shown below each entry where applicable. An asterisk (*) denotes incomplete radula. Larger shells tend to have a larger radula, but this is not so with species *N. species x* cf. *N. emblema*, in which it varies considerably.**




Some *Notocypraea* species discussed in this article: 1. *Notocypraea angustata* (Gmelin, 1791), collected at Port MacDonnell, S. Australia, (C. 24 in author's collection) showing the typically lighter color than those found off Victoria. 2. *Notocypraea emblema* Iredale, 1931 (holotype, C. 57769 in Australian Museum, Sydney) trawled live from 70-90 fathoms off Cape Everard Bank, eastern Bass Strait, Victoria. 3. *Notocypraea comptoni* (Gray, 1847) (T. Eichhorst collection) from Elliston Bay, S. Australia. 4. *Notocypraea declivis* (Sowerby, 1870) (C. 179 in author's collection) from Port MacDonnell, S. Australia. 5. *Notocypraea piperata* (Gray, 1825) (T. Eichhorst collection) from Victor Harbor, S. Australia. 6. *Notocypraea pulicaria* (Reeve, 1846) (T. Eichhorst collection) from Albany, West Australia. 7. *Notocypraea* sp. X (F. 113604, Museum Victoria) from the Bass Strait Cable, collected in 1910. 8. *Notocypraea molleri* (Iredale, 1931) (holotype, C. 57767 in Australian Museum, Sydney) trawled from 45 fathoms off Twofold Bay, New South Wales. Is this actually a specimen of *N. angustata*? Images by the author and T. Eichhorst.

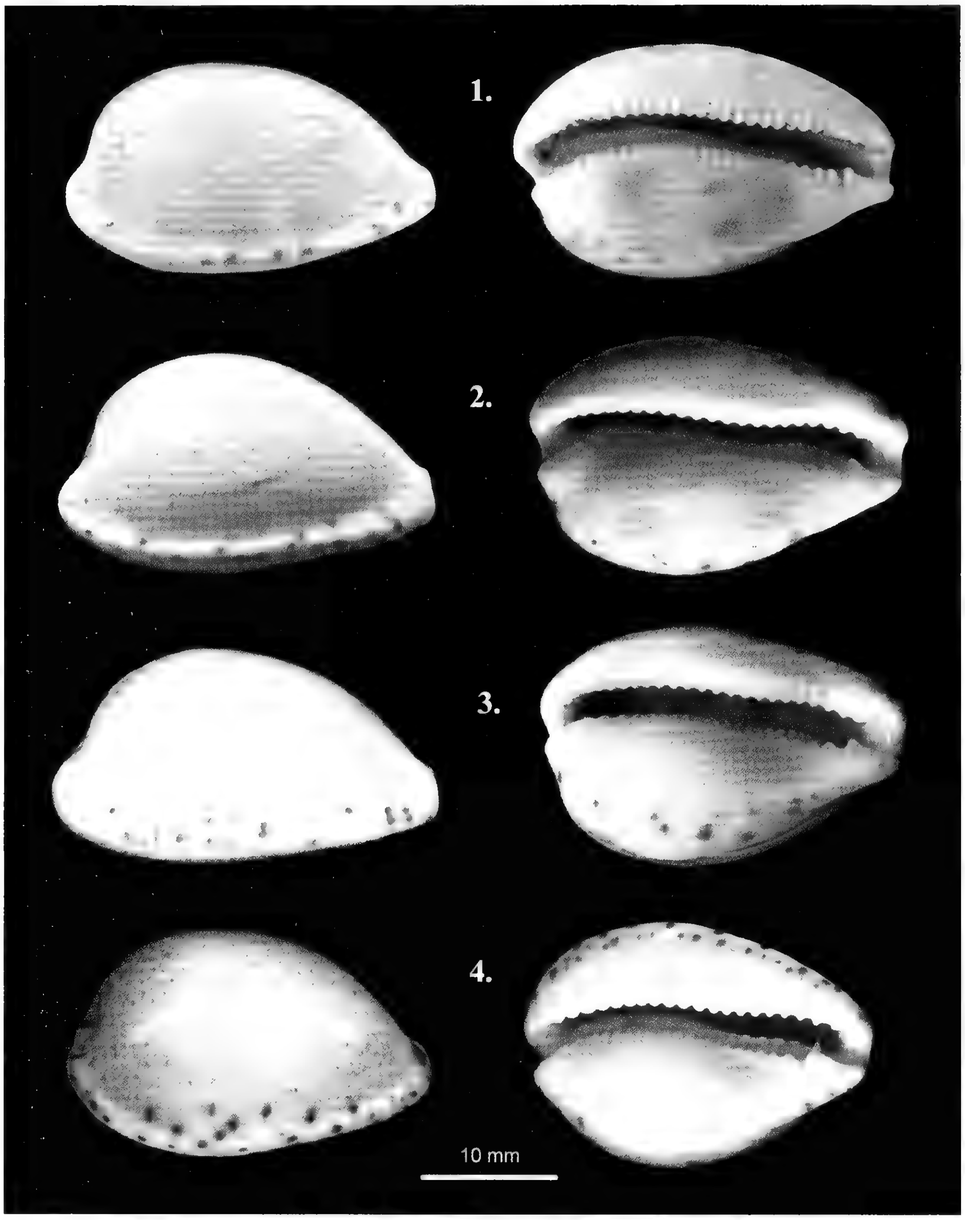
Right: Three specimens in the *Notocypraea* species X cf. *Notocypraea emblema* complex and one of *N. declivis*.

1. The top specimen is labeled *N. molleri*, F. 20865 in the Museum Victoria. It was collected off Gabo Island, located less than a kilometer offshore of the border between Victoria and NSW. This appears to be *N.* sp. X cf. *N. emblema*.

2. The specimen in the middle is *N.* sp. X cf. *N. emblema* (C. 117, author's collection) from Point Macdonnell, S. Australia.

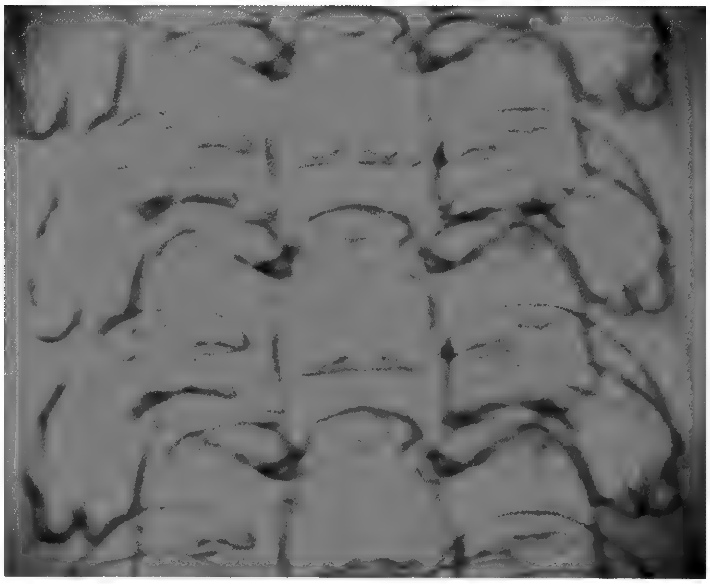
3. The specimen on the third row is *N.* sp. X cf. *N. emblema* (C. 34, author's collection) from Port MacDonnell, S. Australia.

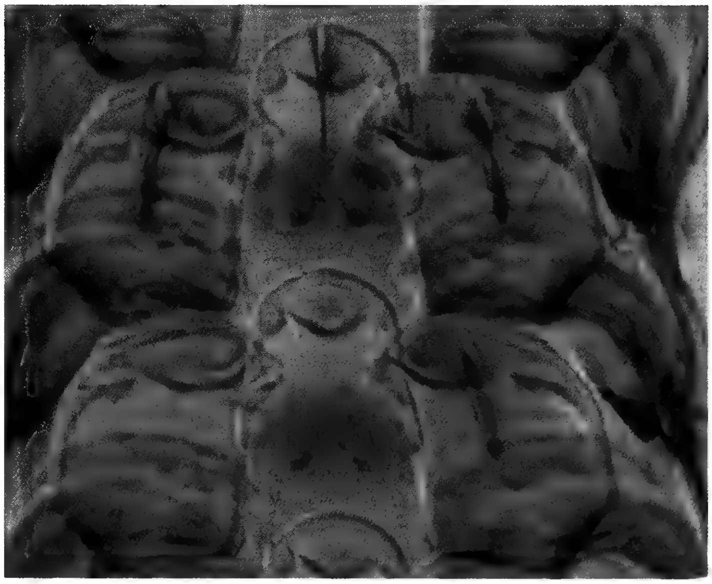
4. The specimen on the bottom row is *N. declivis* from Port MacDonnell, S. Australia. This species commonly occurs with little dorsal spotting, making it easy to confuse with *N. emblema*.




Below left: *N.* sp. X cf. *N. emblema* (F. 113604, Museum Victoria) from a specimen collected on the Bass Strait cable, S. Australia. The squared central tooth and basal denticles of *N. emblema* are readily apparent.

Below right: *N.* sp. X cf. *N. emblema* (C. 34, author's collection) from a specimen collected off Point MacDonnell. Again the central tooth structure marks this species as different from *N. angustata* or *N. declivis.*

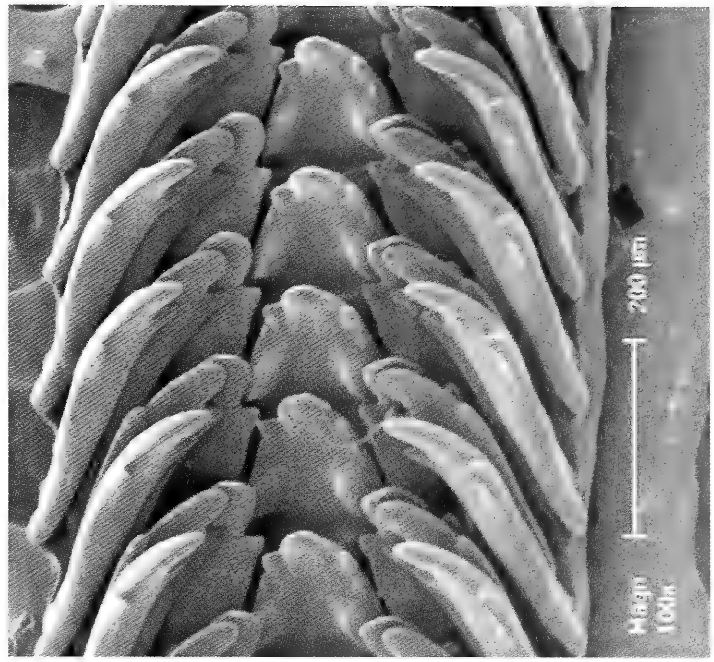




I believe the holotype of *N. molleri* (holotype illustrated), of which no radula has been preserved, is a pale form of *N. angustata*, similar to the pale specimens of this species commonly found at Port MacDonnell. Two other taxa may fall into this complex: *N. albata* (Beddome, 1897) and *N. subcarnea* ( Beddome, 1896). I personally examined both these holotypes in the BMNH in 1980 (the type of *N. subcarnea* is currently on loan to Museum Victoria). *N. albata* (type locality, Tasmania) is a pure white shell, with heavily calloused margins with no spots, 24.8 x 17.8 x 15mm, with 23 labial and 20 columellar teeth, and may be an albino form of *N. angusta, N. declivis* or *N. emblema*, but this is impossible to determine without a study of the animal. (F.A Schilder, 1964) described it as a monstrosity of *N. angustata* suffused with a heavy white callus and I prefer to leave it there for now. *N. subcarnea* (type locality, Derwent River, Tasmania), has a pale fawn dorsum with no bands, is sparsely spotted on both margins that are very calloused, and the sides and base are white. The shell measures 22.9 x 15.9 x 11.7mm, with 26 labial and 22 columellar teeth. I recently compared the holotype of *N. subcarnea* to a known live collected specimen of *N. declivis* with a plain fawn dorsum from Bichino in Tasmania. Fully adult shells of *N. declivis* that are plain with unspotted dorsums are relatively common and can easily lead to misidentification. I can find very little difference between this shell and the holotype of *N. subcarnea.* Dr. Lorenz has recently accepted *N. subcarnea* as a valid species. If specimens could be found alive that match the holotypes of *N. subcarnea* and *N. albata*, their relationship to *N. angustata*, *N. declivis*, *N. emblema*, and species X could easily be verified by the radula and, depending on the results, *N. subcarnea* or *N. albata* may be earlier names.

Due to changes in trawling methods, where the net now does not touch the bottom, a window of opportunity was lost between 1930 and 1970 when many deep-water specimens were cleaned out and sold to collectors. Some workers at the time disputed the value of animal studies advocated by Griffiths in his 1962 review and now we have to rely on the very few specimens that were retained. Obtaining shells from depths of 50-100 fathoms will now have to be done by costly scientific expedition. The latest field of study is, of course, DNA, and I suggest a good area to explore would be at Port MacDonnell where *N. declivis* and the little nondescript shell (species x) can be found intertidally. DNA studies are expensive and can only be done by an expert in the field and funding for projects of this type is not readily available. DNA studies by Dr. Chris Meyer (2004 and 2005) have indicated that *N. angustata* and *N. declivis* are sister but distinct species, as are *N. piperita* and *N. pulicaria. N. comptonii* is also distinct but more closely related to *N. angustata* and *N. declivis* than to *N. piperita* or *N. pulicaria,* which seems to confirm the overall radular evidence. We must be sure in our rush to embrace new technology that we don't stumble over the obvious, without taking into account published studies with factors other than the just the shell.

There are several people I would like to thank who have assisted me with this project: Dr. Allison Miller and Ian Loch of the Australian Museum for the holotype images of *N. molleri* and *N. emblema* and for the loan of the radula slide of *N. emblema.* Dr. Amelia MacLellan of the BMNH for the loan of the holotype of *N. subcarnea.* Dr. Mark Norman and Chris Rowley of Museum Victoria for assistance in obtaining loans and ready access to museum collections, also Chris for his digital images of the radula of the holotype of *N. emblema.* Robert Burn (Honorary Associate, Museum Victoria) for his continued interest in the project. Coralie Griffiths of Lakes Entrance for her interest and the loan of deep-water specimens from Bass Strait. Finally I would like to acknowledge the late Dr Brian Smith, former Curator of Zoology at Museum Victoria, whose encouragement and assistance with my *Notocypraea* study over many years has been invaluable.




**SEM radula image of *N. angustata* (C 203, author's collection) from off Flinders, South Australia. Shown to contrast with the optical images. Image by Phil Bok of Deakin**

**Selected References:**

**Bradner, H. & Kay, E.A.** 1996. An Atlas of Cowrie Radulae, *The Festivus*, XXV111.

**Cram, D.J.** 1992. The *Notocypraea* types of C.E. Beddome, *Australian Shell News*, No 78: pp. 4-5.

**Cram, D.J.** 2003. On the Trail of an Australian Cowry: *Notodusta eugeniae* Cate, 1975, *American Conchologist*, Vol.31, No.4. pp. 20-21.

**Cram, D.J.** 2006. *Notocypraea*: the *piperita - comptoni* Complex, *American Conchologist*, Vol.34, No.1. pp. 8-13.

**Griffiths R.J.** 1962. A review of the Cypraeidae genus *Notocypraea.* Memoirs of the National Museum, Melbourne 25, pp. 211-231.

**Lorenz, Felix.** 2005. Taxonomic Notes on Two Poorly Known Species of *Notocypraea* (Gastropoda: Cypraeidae) *Visaya,* vol.1, No.5, November 2005, pp.16-18.

**Meyer, C.P.** 2003. Molecular systematics of cowries (Gastropoda : Cypraeidae) and diversification patterns in the tropics, *Biological Journal of the Linnean Society*, 79, 401-459, with 17 figures.

**Meyer, C.P.** 2004. Toward Comprehensiveness: Increased molecular sampling within Cypraeidae and its phylogenic implications, *Malacologia*, 46 (1): 127-156.

**Schilder, F.A.** 1964. Provisional classification of the genus *Notocypraea* (Cypraeidae), *The Veliger*, Vol.7, No.1, pp. 37-43.

**Wilson, B.** 1993. *Australian Marine Shells* Vol.1: Kallaroo, W.A.: Odyssey Pub., pp. 186-187.

**Don Cram**
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# COA convention "Chardonnay & Shells" August 1 - 5, 2007 Portland, Oregon

## *LAST CALL*

The annual COA convention is just a month away and if you have not yet sent in your registration, it is time to do so. After 1 July 2007 it will cost you an extra $15.00. All of the field trips have been set up, with transportation and supplies laid on. Remember, there are two days of field trips; both the 30th and the 31st of July have been set aside for these events. Field trips include Oregon coastal shell collecting, fossil collecting, wine tasting, as well as trips to Mount St. Helens, the Columbia River Gorge, and Mount Hood.

The convention itself has a full schedule of superb speakers and a bourse that promises to be jam packed with shells and shell related items. If you are interested in shell shows, then you will also find we have set up that event and more during the "Chardonnay & Shells" COA convention. Please consider entering the shell show as it is limited to a single shell (to make airline travel easy) and there are plenty of different categories.

One of our key speakers this year is **Dr. Baldomero M. Olivera,** a Distinguished Professor of Biology at Howard Hughes Medical Institute, Chevy Chase, MD. He is a Fulbright Scholar who has won numerous awards for his research (conotoxin biology and chemistry) and scholarship and has authored or co-authored literally hundreds of publications. He was recently elected to the American Academy of Arts and Sciences and selected as Harvard's "Scientist of the Year, 2007." Dr. Olivera is a long-time COA member.

Another key speaker will be **Dr. Felix Lorenz**, best known for his work with worldwide *Cypraea* and his book (with Alex Hubert), "A Guide to Worldwide Cowries." Dr. Lorenz always has some fascinating new discoveries to share and this year will follow his presentation with a **cowry identification workshop.** Please bring any unidentified cowries you may have for probably the best opportunity you will ever have at getting a correct identification.

All of the relevant paperwork was in the last issue of *American Conchologist*, but if you have misplaced it, just log on to the COA web page at: http//:conchologistsofamerica.org. All of the needed forms are online.

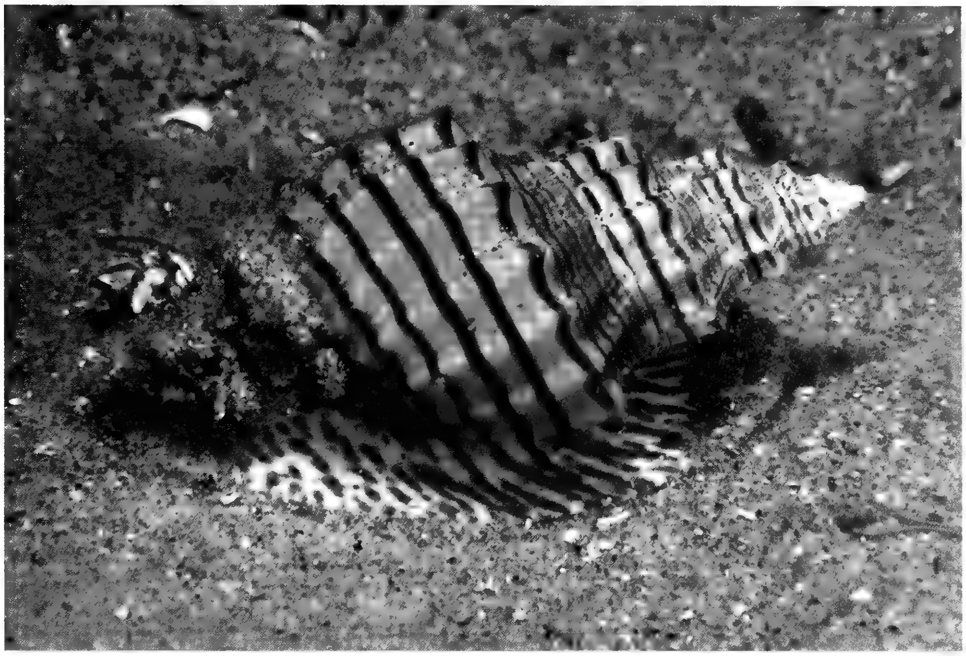
As a final note, you can still donate a shell for any of the silent auctions or the main auction. Again, instructions are in the last issue. If you decide at the last minute to bring a shell to donate, we can accommodate you. It would be best if you could email Joyce Matthys at: joycematthys@aol.com with a brief description of the article and its fair market value.

**A 22 inch bronze merhorse on an onyx base was donated by Don Pisor for the raffle for the "Chardonnay & Shells" COA convention in Portland. This heavy metal sculpture will be on display as you enter the convention center at the hotel. Rooms at convention rates are still available at two adjacent hotels.**

# More On Blood-Sucking Mollusks

by Zvi Orlin

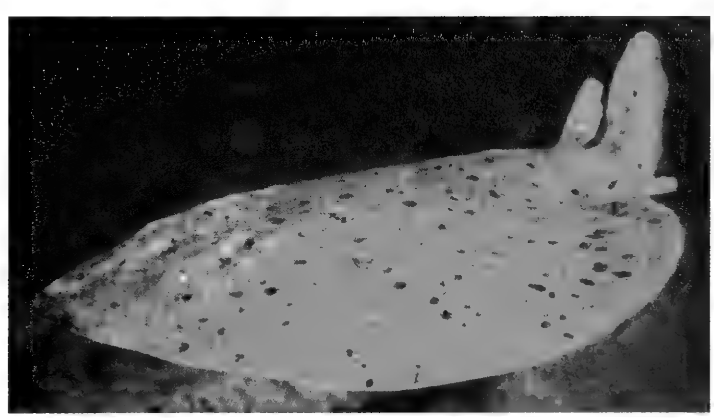
I recently became interested in blood-sucking mollusks and was glad to note Dr. Robert Robertson's article on the Pyramidellidae in the September issue of *American Conchologist*. I would like to add some information I have accrued on the subject, which is confined to only a few families and species



**Cancellaria cooperi* Gabb, 1865, 40mm, photographed by Lovell & Libby Langstroth in Monterey Bay, California, in 26 meters of water. This image can be seen on page 221 of "A Living Bay: The Underwater world of Montery Bay," by the Langstroths (University of California Press). Used courtesy of the authors.**

The family Cancellariidae was first considered to be vegetarian and later it was thought they fed on soft-bodied microorganisms, until their feeding habits were more carefully studied. Perhaps the species most well known for its feeding habits is *Cancellaria cooperi* Gabb, 1865, highlighted in an article by O'Sullivan *et al.* (1987). During scuba dives the authors observed this species partially buried on the backs of the electric ray *Torpedo californica* Ayres. As many as seven individuals of this rare cancellarid were observed on a single ray. The authors decided to conduct a laboratory experiment in which an aquarium was fed by running seawater and inhabited by living specimens of *Cancellaria cooperi.* When specimens of *Torpedo californica* were introduced into the aquarium, the mollusks were attracted to them, extended their long proboscides, and made small cuts in their ventral surface. The proboscides appeared to pulsate as though pumping fluid from the prey. Subsequent microscopic examination proved the fluid was blood. Sometimes the proboscis was inserted into other organs such as the mouth, gill slits, or anus. *Cancellaria cooperi* usually remained buried in the sand but were attracted to approaching rays (by chemosensory means), even in a maze. On rare occasions other divers have also seen snails on electric rays. This, however, is not the only blood-sucking mollusk.

Philippe Bouchet published an article in 1989 on marginellids parasitizing sleeping fish. He conducted a number of nighttime scuba dives between 1980 and 1985 in New Caledonia to observe sleeping fishes. The families studied were mainly Scaridae (parrotfish), Serranidae (groupers and seabass) and Pomacentridae (damselfish). They found 1 to 2 species of marginellids with up to 10 individuals parasitizing some 30 different fish. According to the author's identification the most common of the mollusks was *Hydroginella caledonica* (Jousseaume, 1876). They were observed inserting their proboscides into the host tissue, but it was only an assumption that the snail was pumping fluid from the fish, supported by similar behavior by eulimids on echinoderms, and pyramidellids on bivalves and polychaetes. Bouchet mentions one other species, *Tateshia yadai* (Kosuge, 1986), described as an ectoparasite on the scorpionfish *Helicolenus hilgendorfi*. Kosuge relates classifying 50 snails collected by fishermen at a depth of 300 meters off southern Japan as a new olivid species, *Tateshia yadai*. Bouchet later argued they more properly belonged in the family Marginellidae. As only limited information was available at the time of the publication of Bouchet's article, he postulated that nine additional species may be fish parasites. About a decade ago, still other blood-sucking mollusks were reported.



***Torpedo californica*, the Pacific electric ray, seems to be the chosen prey of *Cancellaria cooperi*. This specimen was photographed off the Channel Islands, California, by Daniel Gotshall. http://sanctuaries.noaa.gov/**

An interesting report by Scott Johnson *et al.* (1995) on Colubrariidae and Marginellidae in the Marshall Islands detailed some intriguing nocturnal activity. Six years of regular night observations resulted in the discovery of six species of Colubrariidae associated with and parasitizing sleeping fish. The mollusks included: *Colubraria tortuosa* (Reeve, 1854), *C. nitidula* (Sowerby, 1833), *C. muricata* (Lightfoot, 1786), *C. obscura* (Reeve, 1844), *C. castanea* Kuroda & Habe, 1952, and one unidentified *C.* aff. *obscura.* These observations were made at Kwajalein Atoll in the Marshall Islands mainly on Scaridae (Parrotfishes). All specimens of the mollusks were either feeding on or were within one meter of the sleeping fish. The proboscis most often enters the fish through the mouth, anus, gill opening, or eye socket, but occasionally the attack occured beneath a body scale. *C. tortuosa* and *C. nitidula* were the most commonly found and were usually found in groups of two or more, with occasionally up to nine individuals on a single host, sometimes both species on the same fish. The authors also observed two cases of daylight feeding: one of *C. nitidula* and the other of *C. castanea.* In addition they observed two other mollusk species feeding on fish, one tentatively identified as *Kogomea ovata* Habe, 1951, and the other resembling the *Hydroginella caledonica* as reported by Bouchet, although the observed species were much smaller.

Hopefully this information will engender more interest in the subject and will lead to further investigations of the feeding behavior of the interesting blood-sucking mollusks.

**References:**

**Bouchet, Philippe**. 1989. A marginellid gastropod parisitizes sleeping fish, Bulletin of Marine Science 45(1): 76-84.

**Buck, Larry**. 1991. Observations of *Cancellaria cooperi* Gabb, 1865, parasitizing two species of invertebrates. The Festivus, 23(9): 69-70.

**Johnson, Scott; Johnson, Jeanette; and Jazwinski, Stan**. 1995. Parasitism of sleeping fish by gastropod mollusks in the Colubrariidae and Marginellidae at Kwajalein, Marshall Islands, The Festivus, 27 (11).

**O'Sullivan, J.B., McConnaughey, R.R, and Huber, M.E**. 1987. A bloodsucking snail: The Cooper's Nutmeg, *Cancellaria cooperi* Gabb, parasitizes the California Electric Ray, *Torpedo californica* Ayres, Biological Bulletin 172: 362-366.

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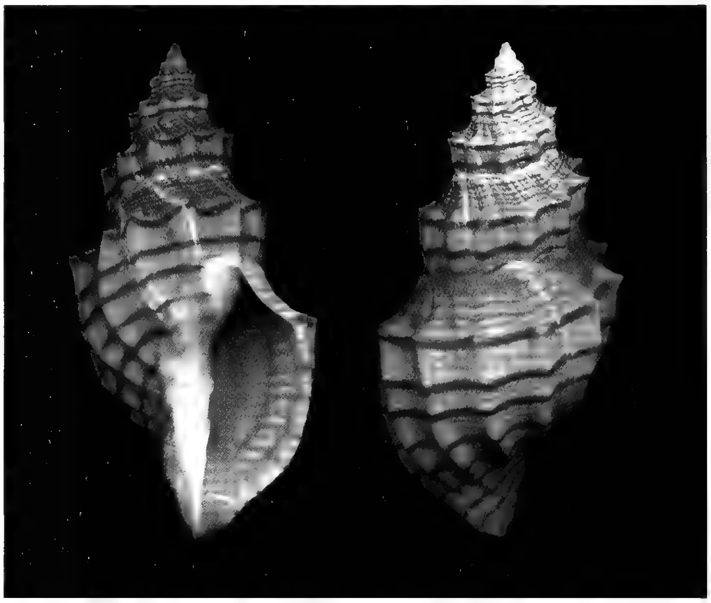
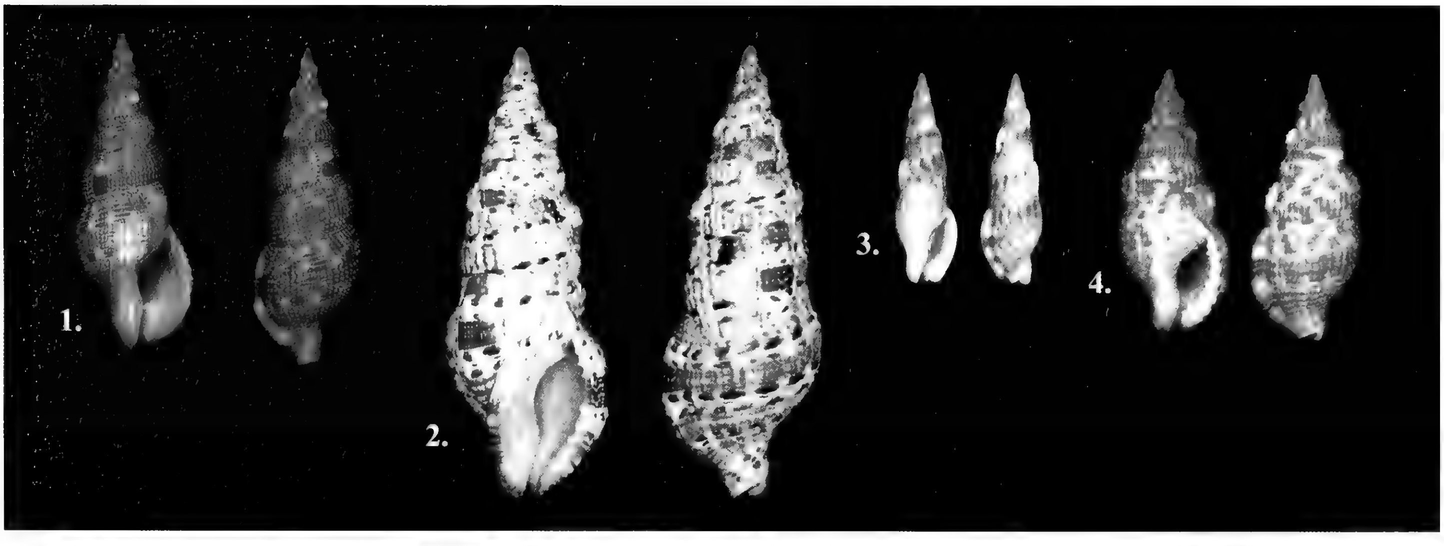
***Chlorurus perspicillatus*, the spectacled parrotfish, sleeps on the reef floor wedged in between coral.**



**Above: *C. cooperi* as the conchologist normally sees it. This is a 50mm shell from off San Diego in the collection of Bruce Neville. Below: Some of the blood-sucking Colubrariidae. 1. *C. castanea* Kuroda & Habe, 1952, 50mm, Japan; 2. *C. muricata* (Lightfoot, 1786), 90mm, Philippines; 3. *C. nitidula* (Sowerby, 1833), 24mm, Japan; 4. *C. obscura* (Reeve, 1844), 35mm, Brazil. All images courtesy of Femorale at: http://femorale.com.**



# 2007 SHELL SHOWS & RELATED EVENTS
# July - December

**- The following information is subject to change; please verify with individual organizations -**

Jul. 14-15 2007 — **KEPPEL BAY SHELL SHOW,** Yeppoon, Queensland, Australia
Yeppoon Town Hall
Jean M. Offord, 277 McDougall St.,
N. Rockhampton, Qld. 4701, Australia (7) 4928-3509

Jul. 15-20 2007 — **WORLD CONGRESS OF MALACOLOGY JOINT UNITAS & AMERICAN MALACOLOGICAL SOCIETY MEETING,** Antwerp, Belgium
University of Antwerp, Groenenborger Laan 171, B2020, Antwerp
Dr. Thierry Backeljau
E-mail: wcm@naturalsciences.be 32 (2) 627-4339
www.ucd.ie/zoology/unitas & www.malacological.org

Jul. 21-22 2007 — **TOWNSVILLE SHELL SHOW**, Townsville, Queensland, Australia
Cutharinga Bowls Club on Harold Street, West End
Glenda Rowse, 19 Farrell Street
Kirwan 4814, Queensland, Australia (7) 4773-2817

Aug. 1-5 2007 — **CONCHOLOGISTS OF AMERICA ANNUAL CONVENTION,** Portland, Oregon
The Monarch Hotel, 12566 SE 93rd Avenue, Clakamas, OR
Joyce Matthys
October – April: 1842 Woodstock Circle NW, Salem, OR 97304 (503) 585-5286
May – September: 1119 Periwinkle Way #52, Sanibel Island, FL 33957 (239) 472-2885
E-mail: joycematthys@aol.com
Web site: www.conchologistsofamerica.org

Aug. 17-19 2007 — **JERSEY CAPE SHELL SHOW**, Stone Harbor, New Jersey
The Wetlands Institute, Stone Harbor
Karen Lelli e-mail: kjlelli@comcast.net
Tel. (856) 691-5831

Sept. 15-16 2007 — **28th INTERNATIONAL SHELLS & FOSSIL BOURSE,** Ottmarsheim, France
Salle Polyvalente, Rue de la Priscine
Michel Rioual, 2 Rue des Vergers
68490 Ottmarsheim, France
Tel. (3) 89-26-16-43

Sept. 21-23 2007 — **NORTH CAROLINA SHELL SHOW,** Wilmington, NC
Cape Fear Museum of History & Science
814 Market Street
Ann Buddenhagen, 8321 Amber Leaf Court
Raleigh, NC 27612
E-mail: pabjetster@bellsouth.net
Tel. (919) 787-7103

Sept. 22-23 2007 — **ANNUAL GERMAN SHELL FAIR**, Oehringen, Germany
KULTURA Hall, Herrenwiesenstr. 12
Kurt Kreipl, Hoehenweg
D-74613 Oehringen-Cappel, Germany
E-mail: meeresmuseum@t-online.de
Tel. (7941) 62-826, fax: (7941)2065

Oct. 6 –7 2007 — **PHILADELPHIA SHELL SHOW,** Philadelphia, PA
Academy of Natural Sciences, Parkway & 19th St.
Al Schilling, 419 Linden Ave.
Glenside, PA 19038 (215) 886-5807
E-mail: alsch@bellatlantic.net

Oct. 27 2007 — **BRITISH SHELL COLLECTOR'S CLUB CONVENTION,** London, England
Napier Hall, Hide Place & Vincent Street
Tom Walker, 38 Redlands Road
Reading, Berkshire RG1 5HD, England
44 (118) 987-4294
E-mail: tom@tmwalker.co.uk

Oct. 27-28 2007 — **12th PRAGUE INTERNATIONAL SHELL SHOW** Prague, Czech Rep.
KULTURNI DUM LADVI Buresova 1661, Prague 8
Jaroslav Derka, Holeckova 51/370
15000 Praha 5, Czech Republic
42 (2) 5731 6246
Email: jderka@volny.cz

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May 26, 2007

# In a Bag of Sand – A Study of Pinellas County, Florida, Micro-mollusks

## by Tom Grace

While preparing for the 2004 COA Convention in Tampa, Florida, on June 27, 2004, I had the opportunity to take a pre-convention SCUBA diving trip off the adjacent town of Clearwater (Pinellas County), Florida. The dive site was approximately 7 miles northwest of Clearwater, in approximately 40 feet of water. During the course of one dive, a grab sample of bottom sediment was taken for later processing. What came from that "bag of sand" became the basis of this article.

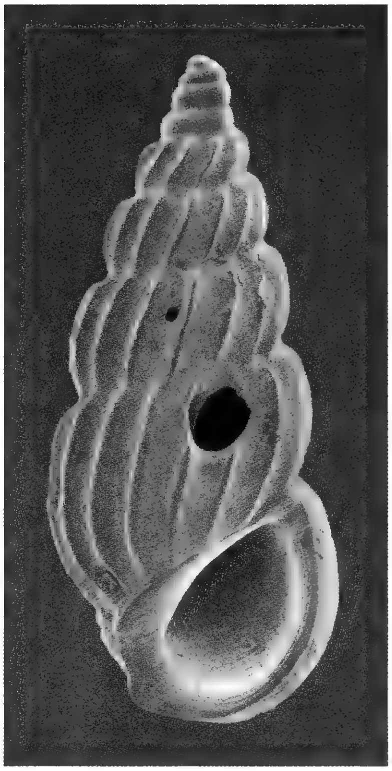
The Gulf of Mexico water off Pinellas County in June 2004 was a warm incubator of sea life. The captain had indicated a water temperature of 83°F and the water was thick with a plankton bloom and poor visibility. On reaching the bottom, I found a fairly consistent limestone table with a few crevices and one long low-profile limestone ridge. Most of this dive was spent concentrating on what might be found along the ridge structure.

Where several crevices funneled off the ridge and created debris piles, samples of the debris were taken for later analysis. These collection areas served to concentrate the regional micro-shells after they died and allowed a more concentrated collection effort. The technique for sample collection, while primitive, was efficient. Using a cotton pillow case cover, maintained folded inside my dive suit until first needed; I would literally grab samples from several of these debris piles, scooping them into the pillow case. In this manner, I collected approximately five kilograms of bottom material (dried) for later processing.

Concerning the "pillow-case" collection method. It may sound a bit strange, but for a diver, it is efficient. The folded pillow case takes up little room; it is easy to handle when wet; the mouth opens wide to accept material and can be knotted closed when finished; it is porous, allowing excess water and fine silt to be strained out prior to coming up; if you should lose your case, it is degradable; and finally, when brought up, the sample can be left inside the pillow case, allowed to dry out intact, and then removed at a later time for processing.

Working with grab samples and micro-shells can be a very time consuming process. Many late hours were spent processing specimens while viewing small quantities of this bottom grit under a stereomicroscope. For me, the process of discovery is always the fun part. "What have we found!" Very often, this is then quickly followed with, "What is it?" Identification of many of the listed species from the Clearwater sample would never have been possible without the patience and tutoring of Dr. Harry Lee. It was through his invaluable assistance that the attached summary list of species was realized. The processing of this sample certainly provided its challenges, but the reward for patience and work was an amazing collection of micro-shells.

Dr. Lee and I were very pleased with the results and a bit surprised. The bio-diversity of micro-shells found off this region of Florida in this one grab sample was, simply put, amazing. When the last of the sample was processed and the species identified, the list consisted of a total of 151 species. As noted in the summary list, there were even several species of unnamed taxa discovered, which were identical to counterparts previously discovered on the Atlantic side of Florida, off of Jacksonville (see www.jaxshells.org).



**SEM photo by Yolanda Villacampa, Depart. Invert. Zool. USNM 11/7/06, *Schwartziella* sp. aff. *floridana* (Olsson & Harbison, 1953), *cf.* Florida Risso; H. G. Lee Collection, 3.31mm, dredged 100ft, East of St. Augustine by Ted Yocius, 1981.**

In summary, the time and effort needed to collect and research micro-shells is a rewarding facet of our hobby. It offers an opportunity to explore a world where few really take the time to look. The attached Scanning Electron Microscope (SEM) photo of *Schwartziella* sp. aff. *floridana* (Olsson and Harbison, 1953), a species found in the Clearwater grab sample, demonstrates the beauty seen in many of the micro-shells. The biodiversity of mollusk species from a given location can greatly exceed what you might otherwise think from first looking at the collected "pile of sand." The rewards from such an endeavor include: self-satisfaction of curiosity, expansion of knowledge, discovery of new or expanded territory for a given species, and even the potential for making a new species discovery.


**References:**

**Abbott, R.T.** 1974. American Seashells, Second edition, Van Nostrand Reinhold, New York, 663 pp.

**Lyons, W.G.**, 1989. Nearshore Marine Ecology at Hutchinson Is., Florida: 1971 – 1974 XI, Mollusks, *Florida Marine Research Publications* 47: iii + 1-131, incl. 28 pls.

**Redfern, C.** 2001. Bahamian Seashells: A Thousand Species from Abaco, Bahamas; First edition, Bahamianshells.com, Inc., Boca Raton, 280 pp.

**Turgeon D.D., *et al*.** 1998. Common and Scientific Names of Aquatic Invertebrates from the United States and Canada; Mollusks, Second Edition, American Fisheries Society, Special Publication 26, Bethesda, Maryland.

**www.jaxshells.org.**

# June 27, 2004, NW Clearwater, 40 ft. depth, grab sample:

| Family | Name/Author | Common Name |
|---|---|---|
| Nuculidae | *Nucula proxima* Say, 1822 | Atlantic Nutclam |
| Nuculanidae | *Nuculana acuta* (Conrad, 1832) | Pointed Nutclam |
| Arcidae | *Arca zebra* (Swainson, 1833) | Turkey Wing |
| Arcidae | *Barbatia candida* (Helbling, 1779) | White-Beard Ark |
| Arcidae | *Barbatia tenera* (C.B. Adams, 1845) | Delicate Ark |
| Glycymeridae | *Tucetona pectinata* (Gmelin, 1791) | Comb Bittersweet |
| Pectinidae | *Lindapecten muscosus* (W. Wood, 1828) | Rough Scallop |
| Plicatulidae | *Plicatula gibbosa* Lamarck, 1801 | Atlantic Kittenpaw |
| Spondylidae | *Spondylus americanus* Hermann, 1781 | Atlantic Thorny Oyster |
| Anomiidae | *Anomia simplex* d'Orbigny, 1842 | Common Jingle |
| Ostreidae | *Ostrea equestris* (Say, 1834) | Crested Oyster |
| Lucinidae | *Codakia orbiculata* (Montagu, 1808) | Dwarf Tiger Lucine |
| Lucinidae | *Lucina amianta* (Dall, 1901) | Miniature Lucine |
| Lucinidae | *Lucina trisulcata* Conrad, 1841 | Three-ridge Lucine |
| Lucinidae | *Lucinisca nassula* (Conrad, 1846) | Woven Lucine |
| Lucinidae | *Parvilucina costata* (d'Orbigny, 1842) | Costate Lucine |
| Lucinidae | *Parvilucina crenella* (Dall, 1901) | Many-line Lucine |
| Ungulinidae | *Diplodonta notata* Dall and Simpson, 1901 | Marked Diplodon |
| Chamidae | *Chama congregata* Conrad, 1833 | Corrugate Jewelbox |
| Chamidae | *Chama macerophylla* Gmelin, 1791 | Leafy Jewelbox |
| Leptonidae | *Lepton lepidum* (Say, 1826) | Graceful Lepton |
| Carditidae | *Pleuromeris tridentata* (Say, 1826) | Threetoothed Carditid |
| Crassatellidae | *Crassinella lunulata* (Conrad, 1834) | Lunate Crassinella |
| Cardiidae | *Americardia media* (Linnaeus, 1758) | Atlantic Strawberrycockle |
| Cardiidae | *Laevicardium pictum* (Ravenel, 1861) | Painted Eggcockle |
| Cardiidae | *Papyridea semisulcata* (J.E. Gray, 1825) | Frilled Papercockle |
| Cardiidae | *Trachycardium egmontianum* (Shuttleworth, 1856) | Florida Pricklycockle |
| Cardiidae | *Trachycardium muricatum* (Linnaeus, 1758) | Yellow Pricklycockle |
| Tellinidae | *Tellina aequistriata* Say, 1824 | Striate Tellin |
| Tellinidae | *Tellina iris* Say, 1822 | Rainbow Tellin |
| Tellinidae | *Tellina listeri* Röding, 1798 | Speckled Tellin |
| Tellinidae | *Tellina sybaritica* Dall, 1881 | Sybaritic Tellin |
| Semelidae | *Cumingia coarctata* G.B. Sowerby I, 1833 | Contracted Semele |
| Semelidae | *Ervilia concentrica* (Holmes, 1860) | Concentric Ervilia |
| Semelidae | *Semele bellastriata* (Conrad, 1837) | Cancellate Semele |
| Semelidae | *Semele proficua* (Pulteney, 1799) | Atlantic Semele |
| Semelidae | *Semele purpurascens* (Gmelin, 1791) | Purplish Semele |
| Semelidae | *Semelina nuculoides* (Conrad, 1841) | Nut Semele |
| Veneridae | *Chione elevata* (Say, 1822) | - |
| Veneridae | *Dosinia discus* (Reeve, 1850) | Disk Dosinia |
| Veneridae | *Gouldia cerina* (C.B. Adams, 1845) | Waxy Gouldclam |
| Veneridae | *Macrocallista maculata* (L., 1758) | Calico Clam |
| Veneridae | *Timoclea grus* (Holmes, 1858) | Gray Pygmy-venus |
| Veneridae | *Transennella conradina* Dall, 1884 | Colorful Transennella |
| Veneridae | *Transennella stimpsoni* Dall, 1902 | Banded Transennellia |
| Corbulidae | *Corbula dietziana* C.B. Adams, 1852 | Rose Corbula |
| Gastrochaenidae | *Gastrochaena hians* (Gmelin, 1791) | Atlantic Gastrochaenid |
| Pholadidae | *Jouannetia quillingi* Turner, 1955 | Spiny Piddock |
| Periplomatidae | *Periploma margaritaceum* (Lamarck, 1801) | Unequal Spoonclam |
| Dentaliidae | *Antalis antillarum* (d'Orbigny, 1842) | Antillean Tuskshell |
| Dentaliidae | *Graptacme eborea* (Conrad, 1846) | Ivory Tuskshell |
| Fissurellidae | *Diodora cayenensis* (Lamarck, 1822) | Cayenne Keyhole Limpet |
| Fissurellidae | *Diodora listeri* (d'Orbigny, 1842) | - |
| Fissurellidae | *Lucapinella limatula* (Reeve, 1850) | File Fleshy Limpet |
| Turbinidae | *Arene tricarinata* (Stearns, 1872) | Gem Cyclostreme |
| Turbinidae | *Astralium phoebium* (Röding, 1798) | Longspine Starsnail |
| Turbinidae | *Turbo castanea* Gmelin, 1791 | Chestnut Turban |
| Trochidae | *Tegula fasciata* (Born, 1778) | Silky Tegula |
| Calliostomatidae | *Calliostoma euglyptum* (A. Adams, 1855) | Sculptured Topsnail |
| Calliostomatidae | *Calliostoma pulchrum* (C.B. Adams, 1850) | Beautiful Topsnail |
| Obtortionidae | *Finella dubia* (d'Orbigny, 1842) | - |
| Cerithiidae | *Bittiolum varium* (Pfeiffer, 1840) | Grass Cerith |
| Cerithiidae | *Cerithium lutosum* Menke,1828 | Variable Cerith |
| Turritellidae | *Vermicularia knorrii* (Deshayes, 1843) | Florida Wormsnail |
| Rissoinidae | *Rissoina cancellata* Philippi, 1847 | - |
| Rissoinidae | *Rissoina decussata* (Montagu, 1803) | - |
| Rissoinidae | *Schwartziella sp. aff. floridana* (Olsson and Harbison, 1953) ** | - |
| Rissoinidae | *Zebina browniana* (d'Orbigny, 1842) | Smooth Risso |
| Vitrinellidae | *Anticlimax pilsbryi* (McGinty, 1945) | Cupola Vitrinella |
| Vitrinellidae | *Cochliolepis parasitica* Stimpson, 1858 | Parasitic Scalesnail |
| Vitrinellidae | *Cyclostremiscus beauii* (P. Fischer, 1857) | - |
| Vitrinellidae | *Cyclostremiscus pentagonus* (Gabb, 1873) | - |
| Vitrinellidae | *Cyclostremiscus suppressus* (Dall,1889) | Suppressed Vitrinella |
| Vitrinellidae | *Teinostoma biscaynense* Pilsbry and McGinty, 1945 | Biscayne Vitrinella |
| Vitrinellidae | *Teinostoma megastoma* (C.B. Adams, 1850) | - |
| Caecidae | *Caecum floridanum* Stimpson, 1851 | Florida Caecum |
| Caecidae | *Caecum heladum* Olsson and Harbison, 1953 | Fine-line Caecum |
| Caecidae | *Caecum imbricatum* Carpenter, 1858 | Imbricate Caecum |
| Caecidae | *Caecum nitidum* Stimpson, 1851 | Little Horn Caecum |
| Caecidae | *Caecum pulchellum* Stimpson, 1851 | Beautiful Caecum |
| Vanikoridae | *Vanikoro oxychone* (Mørch, 1877) | West Indian Vanikoro |
| Calyptraeidae | *Calyptraea centralis* (Conrad, 1841) | Circular Chinese-hat |
| Calyptraeidae | *Crepidula aculeata* (Gmelin, 1791) | Spiny Slippersnail |
| Vermetidae | *Dendropoma corrodens* (d'Orbigny, 1842) | Ringed Wormsnail |
| Triviidae | *Hespererato maugeriae* (J.E. Gray,1832) | Green Erato |
| Naticidae | *Tectonatica pusilla* (Say, 1822) | Miniature Moonsnail |
| Cerithiopsidae | *Cerithiopsis sp. aff. academicorum* Rolán and Espinosa, 1996 | - |
| Cerithiopsidae | *Cerithiopsis cf. greenii* (C.B. Adams, 1839) | - |
| Cerithiopsidae | *Retilaskeya emersonii* (C.B. Adams, 1839) | - |
| Cerithiopsidae | *Seila adamsii* (H.C.Lea, 1845) | - |
| Triphoridae | *Metaxia excelsa* Faber and Moolenbeek, 1991 | - |
| Triphoridae | *Similiphora intermedia* (C.B. Adams, 1850) | Beautiful Triphora |
| Triphoridae | "*Triphora*" species | - |
| Epitoniidae | *Epitonium matthewsae* Clench and Turner, 1952 | - |
| Eulimidae | *Eulimostraca* sp. Lyons, 1978 | - |
| Eulimidae | *Eulima bifasciata* d'Orbigny, 1842 | Two-band Eulima |
| Eulimidae | *Melanella bermudezi* Clench and Aguayo, 1933 | - |
| Eulimidae | *Melanella engonia* (A. E. Verrill and Bush, 1900) | - |
| Eulimidae | *Melanella hypsela* (A. E. Verrill and Bush, 1900) | - |
| Eulimidae | *Microeulima hemphillii* (Dall, 1884) | Brown Eulima |
| Eulimidae | *Oceanida graduata* de Folin, 1870 | Shouldered Eulima |
| Eulimidae | *Oceanida inglei* Lyons, 1978 | - |
| Muricidae | *Favartia cellulosa* (Conrad, 1846) | Pitted Murex |
| Buccinidae | *Pollia tincta* Conrad, 1846 | Tinted Cantharus |
| Melongenidae | *Busycotypus spiratus pyruloides* (Say, 1822) | Pearwhelk |
| Nassariidae | *Nassarius albus* (Say, 1826) | White Nassa |
| Fasciolariidae | *Triplofusus giganteus* (Kiener, 1840) | Horse Conch |
| Columbellidae | *Astyris lunata* (Say, 1826) | Lunar Dovesnail |
| Columbellidae | *Costoanachis aff. sparsa* Gundersen, 1998** | - |
| Columbellidae | *Parvanachis obesa* (C.B. Adams, 1845) | Fat Dovesnail |
| Columbellidae | *Suturoglypta iontha* (Ravenel, 1861) | Lineate Dovesnail |
| Olividae | *Olivella perplexa* Olsson, 1956 | - |
| Cystiscidae | *Gibberula sp.aff. lavalleeana* d'Orbigny, 1842 | Snowflake Marginella |
| Marginellidae | *Dentimargo aureocincta* (Stearns, 1872) | Gold-lined Marginella |
| Costellariidae | *Mitromica foveata* (G.B. Sowerby II, 1874) | - |
| Costellariidae | *Vexillum gemmatum* (G.B. Sowerby II, 1874) | Gem Miter |
| Cancellariidae | *Tritonoharpa lanceolata* Menke, 1828 | Arrow Dwarf Triton |
| Terebridae | *Terebra vinosa* Dall, 1889 | Lilac Auger |
| Turridae/ Clathurellinae | *Nannodiella vespuciana* (d'Orbigny,1842) | - |
| Turridae/ Cochlespirinae | *Pyrgospira ostrearum* (Stearns, 1872) | - |
| Turridae/ Mangeliinae | *Brachycythara biconica* (C.B. Adams, 1850) | - |

| | | |
|---|---|---|
| Turridae/ Mangeliinae | *Glyphoturris rugirima* (Dall, 1889) | - |
| Turridae/ Mangeliinae | *Ithycythara lanceolata* (C.B. Adams, 1850) | Spear Mangelia |
| Turridae/ Mangeliinae | *Kurtziella atrostyla* (Tryon, 1884) | Brown-tip Mangelia |
| Turridae/ Mangeliinae | *Kurtziella limonitella* (Dall, 1884) | Punctate Mangelia |
| Turridae/ Mangeliinae | *Kurtziella margaritifera* Fargo in Olsson and Harbison, 1953 | - |
| Turridae/ Mangeliinae | *Pilsbryspira monilis* (Bartsch and Rehder, 1939) | - |
| Turridae/ Mangeliinae | *Pyrgocythara coxi* Fargo in Olsson and Harbison, 1953 | - |
| Turridae/ Mangeliinae | *Pyrgocythara hemphilli* Bartsch and Rehder, 1939 | |
| Turridae/ Mangeliinae | *Vitricythara (Platycythara) elata* (Dall, 1889) | - |
| Pyramidellidae | *Eulimastoma didymum* (A.E. Verrill and Bush, 1900) | - |
| Pyramidellidae | *Mathilda agria* (Dall, 1889) | Netted Mathildid |
| Pyramidellidae/ Turbonillinae | "*Turbonilla*" *fonteini* de Jong and Coomans, 1988 | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Chemnitzia) abrupta* Bush, 1899 | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Chemnitzia) coomansi* van Aartsen, 1994 | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Chemnitzia) hemphilli* Bush, 1899 | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Chemnitzia) sp. aff. hemphilli* Bush, 1899 | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Chemnitzia) unilirata* Bush, 1899 | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Pyrgiscus) pupoides* d'Orbigny, 1842 | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Pyrgiscus) textilis* (Kurtz, 1860) | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Pyrgiscus) species A* of Lee (also Jax)** | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Pyrgiscus) species B* of Lee (also Jax) ** | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Pyrgulina) species* of Lee (also Jax) ** | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Strioturbonilla) ornata* (d'Orbigny, 1842) | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Strioturbonilla) puncta* (C.B. Adams, 1850) | - |
| Pyramidellidae/ Turbonillinae | *Turbonilla (Strioturbonilla) rixtae* de Jong and Coomans, 1988 | - |
| Acteonidae | *Acteon candens Rehder, 1939* | - |
| Cylichnidae | *Acteocina bidendata* (d'Orbigny, 1842) | Two-tooth Barrel-bubble |
| Cylichnidae | *Acteocina candei* (d'Orbigny, 1842) | - |
| Retusidae | *Volvulella persimilis* (Mørch,1875) | Southern Spindle-bubble |
| Bullidae | *Bulla striata* Bruguière, 1792 | Striate Bubble |

* Refer to Abbott reference for additional information.

** These apparently un-named taxa are also found off northeast FL; see www.jaxshells.org.

**Thomas Grace**
**tgrace@caithnessenergy.com**

# Jordan Star's Web Picks

**Mollusks Department, Museum of Comparative Zoology, Harvard University**, http://www.mcz.harvard.edu/Departments/Mollusks/. There are no nice color shell images, but it is an interesting site nonetheless. Much of the mollusk collection is online and searchable, including some 5,000 type lots. Again no images, but (if you can trust their identification) it would show where a particular species had been collected. There is a link to a library of books, papers, and journals, as well as a listing of papers and books for sale. Some of these are actually rather rare and the prices are reasonable.

**Malacolog: Western Atlantic Mollusk Species Database at The Academy of Natural Sciences, PA**, http://www.malacolog.org/ (version 4.1.0). This site often comes up in an online search for an Atlantic mollusk species. It lists 18,912 names, of which 8,438 are synonyms. Each name can be searched and will provide you with the correct name, author, and date; whether to use parentheses or not; and references where information on the species might be found. This is not a casual hobbyist site, but a research tool well worth checking out if you want correct data for Western Atlantic mollusks.

**Snail Survey In Vermont Becomes An Annual Event**, http://www.jaxshells.org/vermont06.htm. While surfing the web for shell information, I was once again directed to the Jacksonville Shell Club web page. I have reviewed this site before, but it continues to grow and the information available is actually quite extraordinary. The link given here will direct you to an article by COA member Harry Lee. What starts out as a simple story of a family outing quickly becomes an extensive listing of Vermont land snails found in basically two different environments. The long list is accompanied by SEM and color photos. Land snails folks will enjoy the article, others can link back to the homepage (http://www.jaxshells.org ) for a wealth of articles and images on various mollusks.

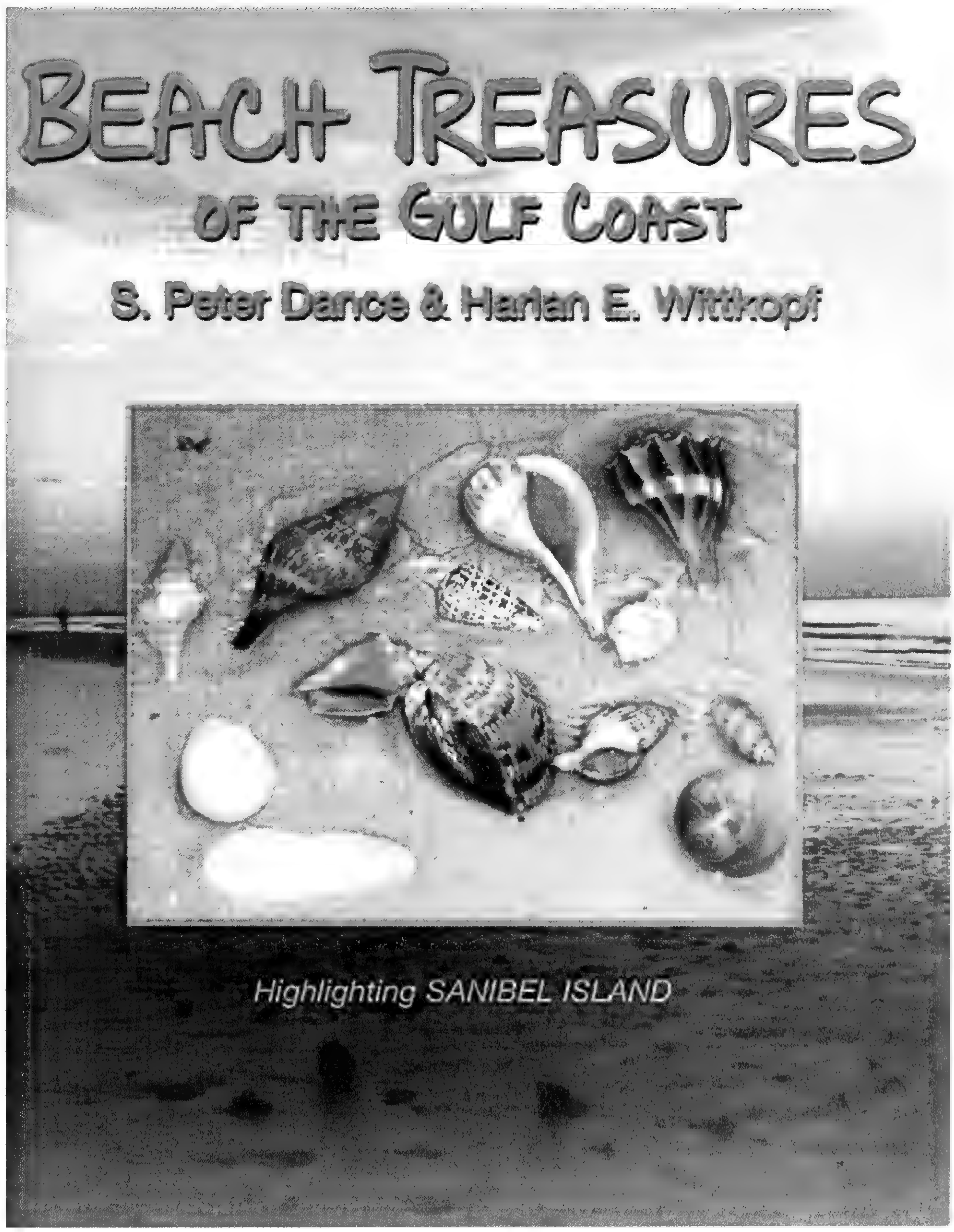
**A flatbed scanner for seashells**, http://www.cameras-scanners-flaar.org/Linotype-Hell_Saphir_Ultra_2/Linotype-Hell_scanning_3D.html. This site might be of interest to those of you who have a scanner or are thinking of getting one. Obviously, a digital camera can be used for shell photography, but check out what a scanner provides. Most scanners work quite well with small shells (under about 30mm) but large shells are more difficult because parts of the shell are farther away from the glass and thus out of focus and dark. This particular model of scanner seems to not have that problem as both shells shown on the web page are large, but the scans are still in focus.

**NIEHS Kids' Pages Interactive and Printable Online Coloring Books**, http://www.niehs.nih.gov/kids/color.htm. These are coloring pages rather than books, but there are quite a few. The titles look like there will be a bit of a "message" with many of them, but "Save the Whales," is just a page with two whales to be colored and "Farmers Are Important" shows a farmer, no message (other than the title). Young children will probably enjoy this site until they find more active computer sessions.

**Links work, 1-06-07**

# BOOK REVIEW:
# BEACH TREASURES OF THE GULF COAST

## By S. Peter Dance & Harlan E. Wittkopf
### reviewed by Rusti Stover




This slim volume, by two seasoned shellers and authors of shell books, addresses the general curiosity about what treasures, especially shells, may be reaped from beaches, specifically Gulf Coast beaches. Noted author and former museum curator, S. Peter Dance of Carlisle, England, has collaborated with his friend, Harlan E. Wittkopf, avid shell collector and retired lawyer and judicial magistrate from Iowa, to produce a little book for those who may be less interested in the scientific or "technical" aspects of what they might find than in enjoying the simple pleasures of seeing, handling, and marveling at some of nature's most beguiling creations.

Most of the 56 pages of "Beach Treasures" are lush with fine color photos by Harlan, Peter, and Peter's son Philip. Together with an easy-to-read text, a glossary and a map of good shelling places around the Gulf, the hobby of shell collecting comes alive as an enjoyable and informative experience for young and old alike. Without forsaking scientific accuracy, the authors also convey the message that shelling can be, perhaps should be, fun. Shells, some of them containing the animals that formed them, are photographed in their natural habitats, or more often, as they are seen when washed up on the beach.

The joy of shell collecting has graced the authors' lives for many years, a joy that is captured in Peter's poem, on page 48. Harlan and Peter have spent a lot of time collecting, observing, and enjoying the shells of Sanibel Island, western Florida's unique paradise for shellers. Not surprisingly, their photos highlight this favored island. Their delightful book, however, is relevant to much more than just Sanibel. This soft-covered publication, with its eye-catching cover, is a perfect "starter shell book" for any visitor, illustrating exactly what a walk on a Gulf Coast beach might reveal and describing these finds in non-technical language. "Beach Treasures" is guaranteed to help you enjoy collecting and observing shells anywhere along this shell-rich coast. For this, if for nothing else, it deserves to become a best seller.

**Rusti Stover**
rusti@houston.rr.com

Bio Note: Rusti Stover is a member of the Houston Conchology Society and Sea Shell Searchers of Brazoria County, as well as COA. She last reviewed Peter Dance's book "Out Of My Shell" in the December 2006 issue. Rusti is shown receiving the COA Award on page 31.

*Please use this form if you would like to nominate someone for the Neptunea Award*

# The Neptunea Award

**The Neptunea Award was established in order to recognize outstanding and distinguished service to conchologists and malacologists. This award is given to up to 3 awardees for:**

1. **1. Service to the organization, Conchologists of America**
   **OR**
2. **2. Service to the scientific interests of Conchologists of America**
   **OR**
3. **3. Service to the science of Malacology as it applies to conchologists**

Nominations are due by July 15, 2007. The board will choose the recipient(s) from the nominations. Nominees are not limited to COA members, but COA Board members cannot be nominated.

Name of nominee: ______________________________________________

This person deserves this award because: (Please write a detailed paragraph describing why this person deserves this award.)

________________________________________________________________

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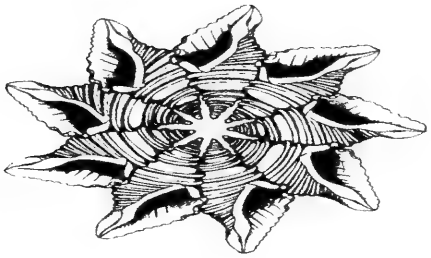
Mail before July 15, 2007 to:
Carole Marshall, COA Trustee
932 Cochran Drive

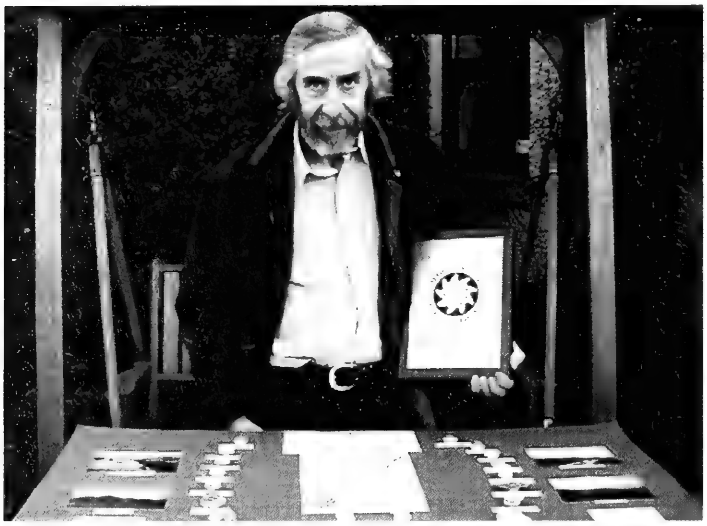


Houston Conchology Society winner Rusti Stover. Apologies to Rusti, we mentioned her award last time but her photo was not included. This show was held in May of 2006 and her exhibit was "*Cypraea tigris*, King of Variation."

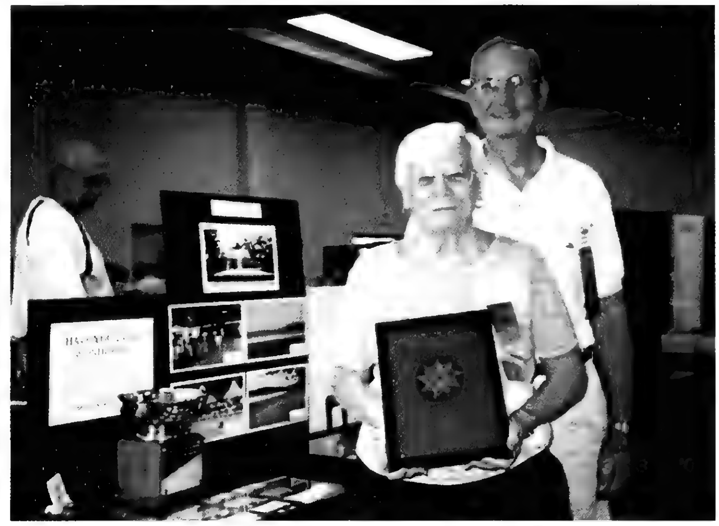

At the Keppel Bay Shell Club, July 2006, the winning exhibit was the exhibit by the Prowse family entitled "Philately and Shells." They were presented the COA Award by club President Allan Davidson and WIN TV weatherman Peter Byrne.


At the North Carolina Shell Show, September 2006, the COA Award winners were Ed Shuller and Jeannette Tysor. Their winning exhibit explored the theories behind the similarities of mollusks on each side of the Isthmus of Panama and was titled, "Mystery of the Migrating Mollusks."

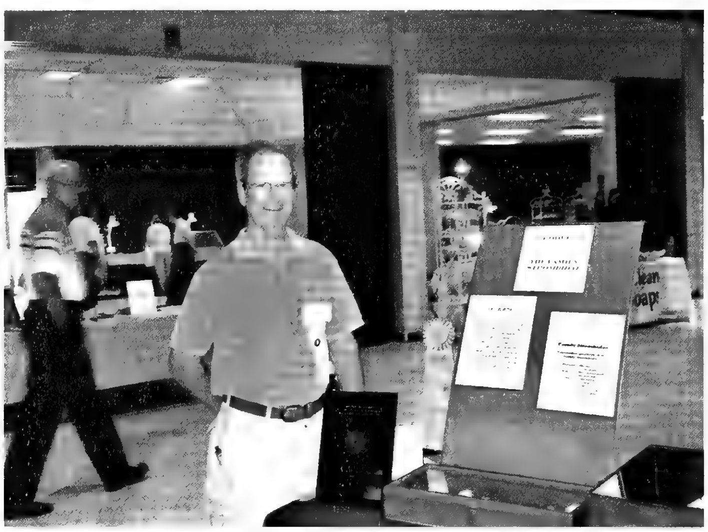
The Sydney, Australia, Shell Show of October 2006 COA Award winner was Maureen Anderson. Her winning exhibit featured the family Harpidae. She is shown accepting her COA Award from Steve Dean the Shell Show Chairman.



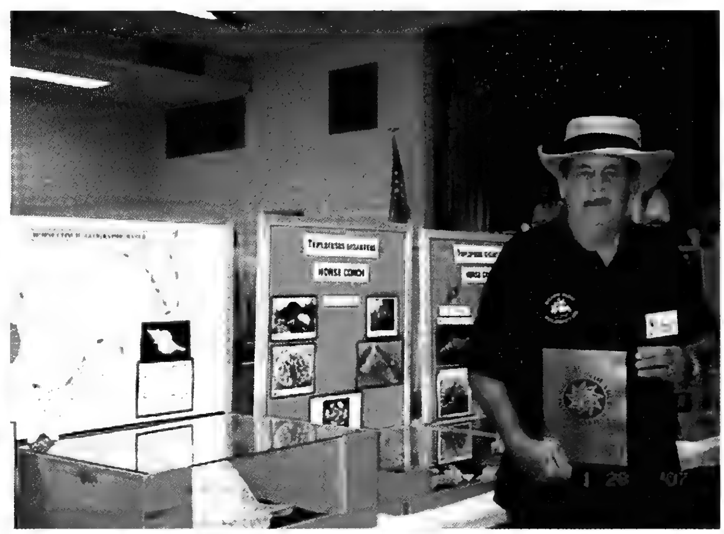
At the British Shell Collectors Club, October 2006, Brian Hammond won the COA Award for his exhibit, "Jura (The Island of the Deer)." His display showed the wealth of molluscan species to be found on the Island of Jura in the Hebrides.



At the Sanibel Shell Show, March 2007, the COA Award was won by Hal and Margarite Pilcher. Their exhibit, "Self Collected Shells" showed the results of shelling on 3 separate trips. Their exhibit had 6 cases for a 13-foot exhibit.

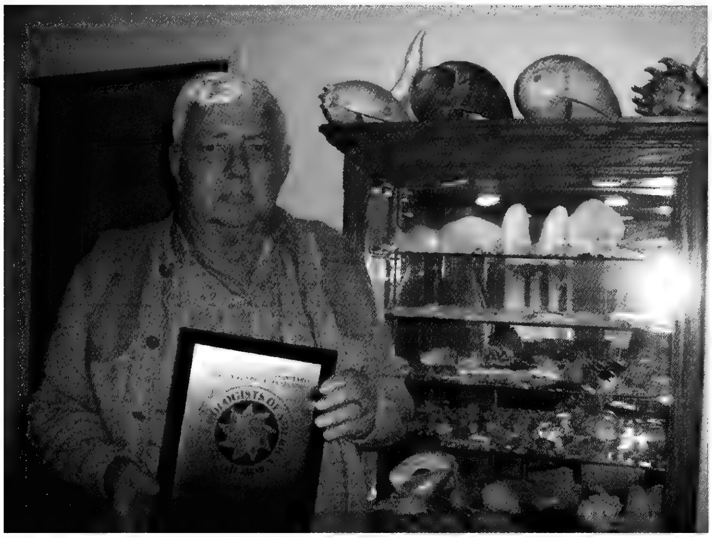


At the Astronaut Trail Shell Show, January 2007, the COA Award was won by Norman Terry with his superb exhibit on the Family Strombidae.

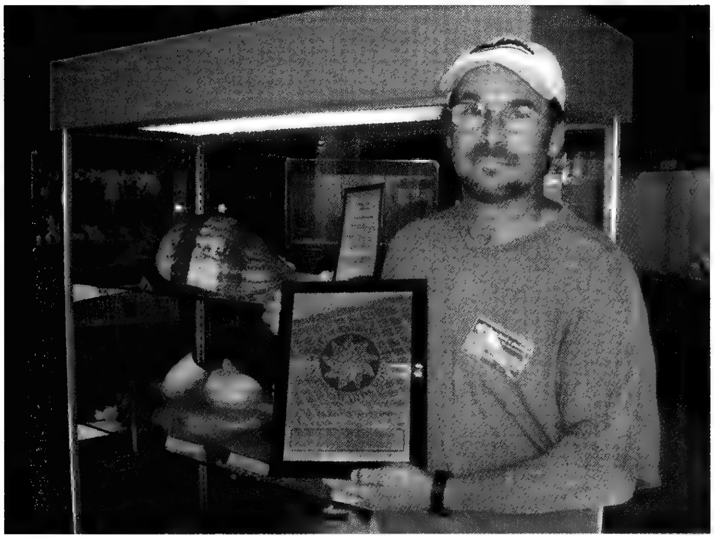



At the Broward Shell Show, February 2007, the COA Award was won by Jim Vun Kannon. He took the honors with his 17 cases of *Triplofusus giganteus*, the Florida horse conch. His exhibit showed all aspects of the species from its Pliocene origin to the present, including growth cycle, forms, a display of the second largest horse conch on record, a self-collected specimen. That specimen also won "Shell of the Show."


Left: At the St. Pete Shell Show, March 2007, Peggy Williams won the COA Award with her exhibit, "What the Shell Tells." This exhibit explained how mollusks adapt to food supply, living conditions, and predators and how these adaptations are reflected in the shell sculpture. Peggy also won the self-collected "Shell of the Show" with a *Laevichlamys multisquamata* (Dunker, 1864).



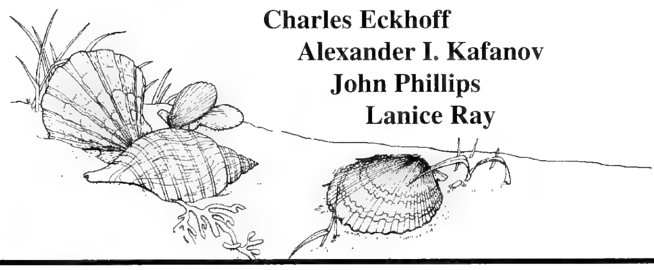
At the Oregon Shell Show, June 2006, the COA Award winner was Ken Matthys with his winning display of "Shells from Around the World."



At the Oregon Shell Show, June 2007, the COA Award winner was John Johnson. His display, "Outer Limits: Collection of Abnormally Large Shells" was a crowd pleaser.

**In Memoriam:**

Lillian Berryman
Edward Boyd
Harry Bozarth
Melbourne R. Carriker
Earl Chesler
Charles Eckhoff
Alexander I. Kafanov
John Phillips
Lanice Ray





# Rare as Hens' Teeth

## by Tom Eichhorst

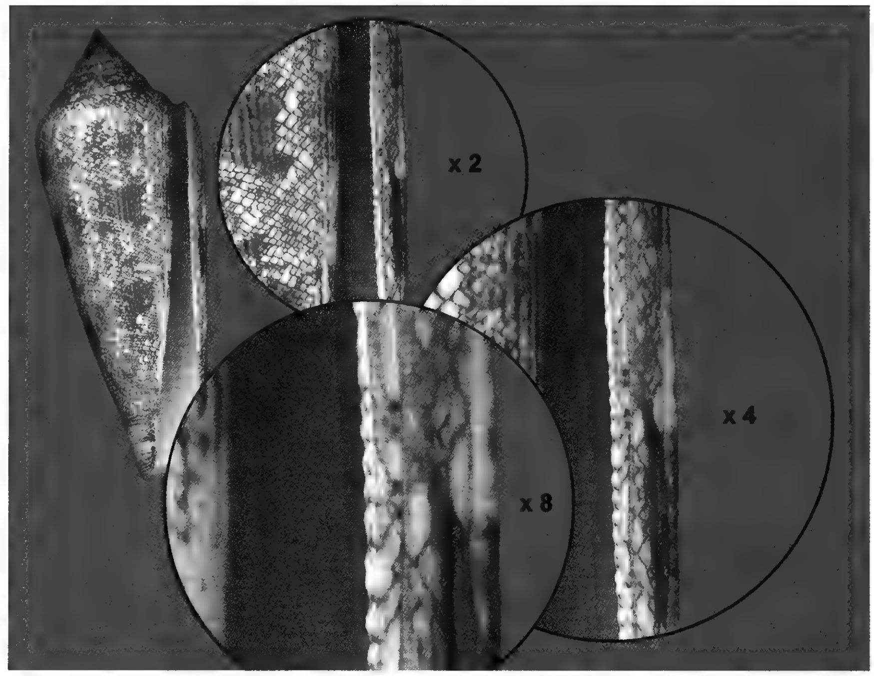
A well-worn expression denoting something really uncommon used to be "rare as hens' teeth." Until a couple of months ago, I would have thought that was true of denticles or crenulations on the outer lip of cone shells. That was about the time I prepared an image with four *Conus gloriamaris* Chemnitz, 1777, for the back page of *American Conchologist*. As I worked with the image to position the four shells and correct background imperfections, I noticed what looked like denticles on the outer lip of a shell in the image. I magnified the image and was amazed to find that just about the entire length of the outer lip was covered by minute denticles.

After examining all four shells, I found that each had a similar sculpturing, although it was more extensive on the larger shells. I began to wonder if this was something that everyone else in the shell world knew about but I had just "missed the memo." I asked a few people who know far more about cone shells than I do, and surprisingly, none had noticed outer lip denticulation in *C. gloriamaris*, but each found it when they looked at their specimens. I then checked the "Manual of the Living Conidae" by Rockel, Korn, and Kohn (1995). This book has perhaps one of the most complete structural descriptions of each of the *Conus* species discussed, but no mention of cone lip denticles. "Cone Shells," by Walls (1979), another book I value, also had no mention of this phenomenon. It was time now to check other cone shells.

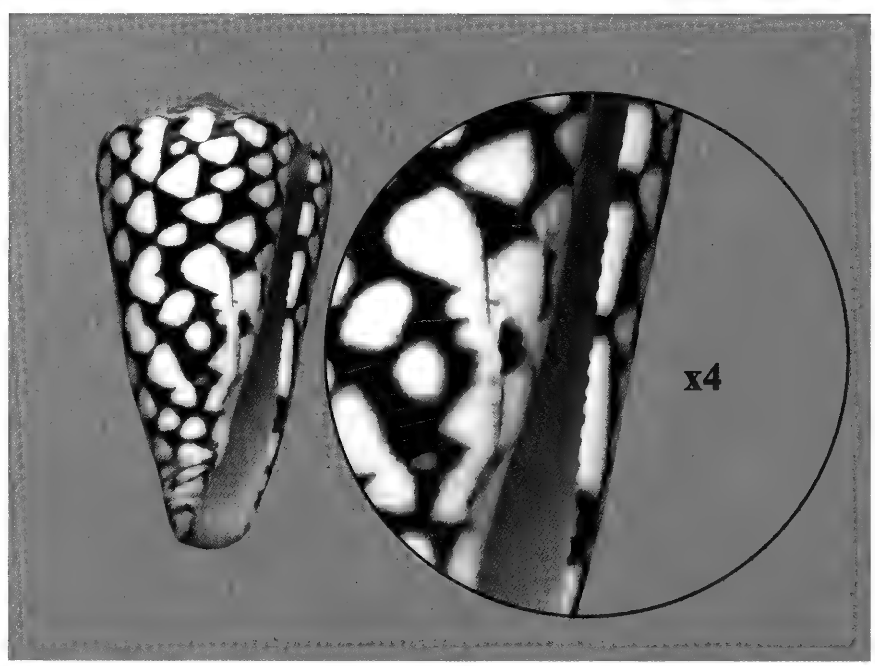
After checking quite a few other *Conus* species I found that *Conus marmoreus* Linnaeus, 1758, also had prominent outer lip denticles and *Conus bengalensis* (Okutani, 1968) had a slight hint of denticles. So far I have not found any other denticulate cones.

The denticles correspond to the tent pattern on *C. gloriamaris*, with the dark tent line being indented and the white area the "tooth." This is true as well for *C. bengalensis* (even thought the denticles are limited), but *C. marmoreus* has teeth that correspond to the small spiral groves around the outer whorl.

I do not have a theory to advance about these structures, or a conclusion to offer, nothing so astute. I just offer up an observation for others interested in such details and mysteries that surround mollusks.




**_Conus gloriamaris_ (128mm) showing the denticles on the outer lip. The dark indented areas correspond to the dark tent markings on the shell. Six specimens from 85 to 128mm were examined; all had outer lip denticles.**




**_Conus marmoreus_ (71mm) showing outer lip denticles. Note that these denticles do not correspond to the shell color pattern but rather to the shell structure of spiral lines (seen opposite the outer lip).**

# The Art of Gregory Aquila

## By Tom Eichhorst

Important institutions in his native Canada were the first to recognize Gregory Aquila's art. In 1983 he was selected to represent young Canadian artists by presenting an original work of art to Pierre Trudeau, then Prime Minister of Canada. He followed this with a series of shows at institutions and galleries in Ontario.

In the 1990s, Gregory traveled throughout Europe. His cousin, contemporary artist Alberto di Fabio, introduced him to the European art scene. He was also able to study with his uncle, internationally renowned artist, Pasquale di Fabio. Gregory then returned to Canada where he taught drawing, painting, and silk screening, as he continued his own art ventures. His creation of murals for businesses in Toronto led to a position with the Pirandello Theatre Society of Toronto, as the Set Designer and Key Scenic Painter. This was followed by other work in television and film as a scenic set painter.

Gregory's interest in shells came with his move from Ontario to Hawaii. He became captivated by the intricacies, structure, and translucency of seashells. He is particularly intrigued by, "...the geometric patterns noted by mathematicians in their discussions of shell formation as logarithmic spirals specified by each species's genetic code." The shell's texture, color, and structure serve as inspiration for Gregory's recent paintings. His skill in rendering fine detail and rich colors are readily apparent. Gregory Aquila's art can be seen at: http://www.gregoryaquila.com/

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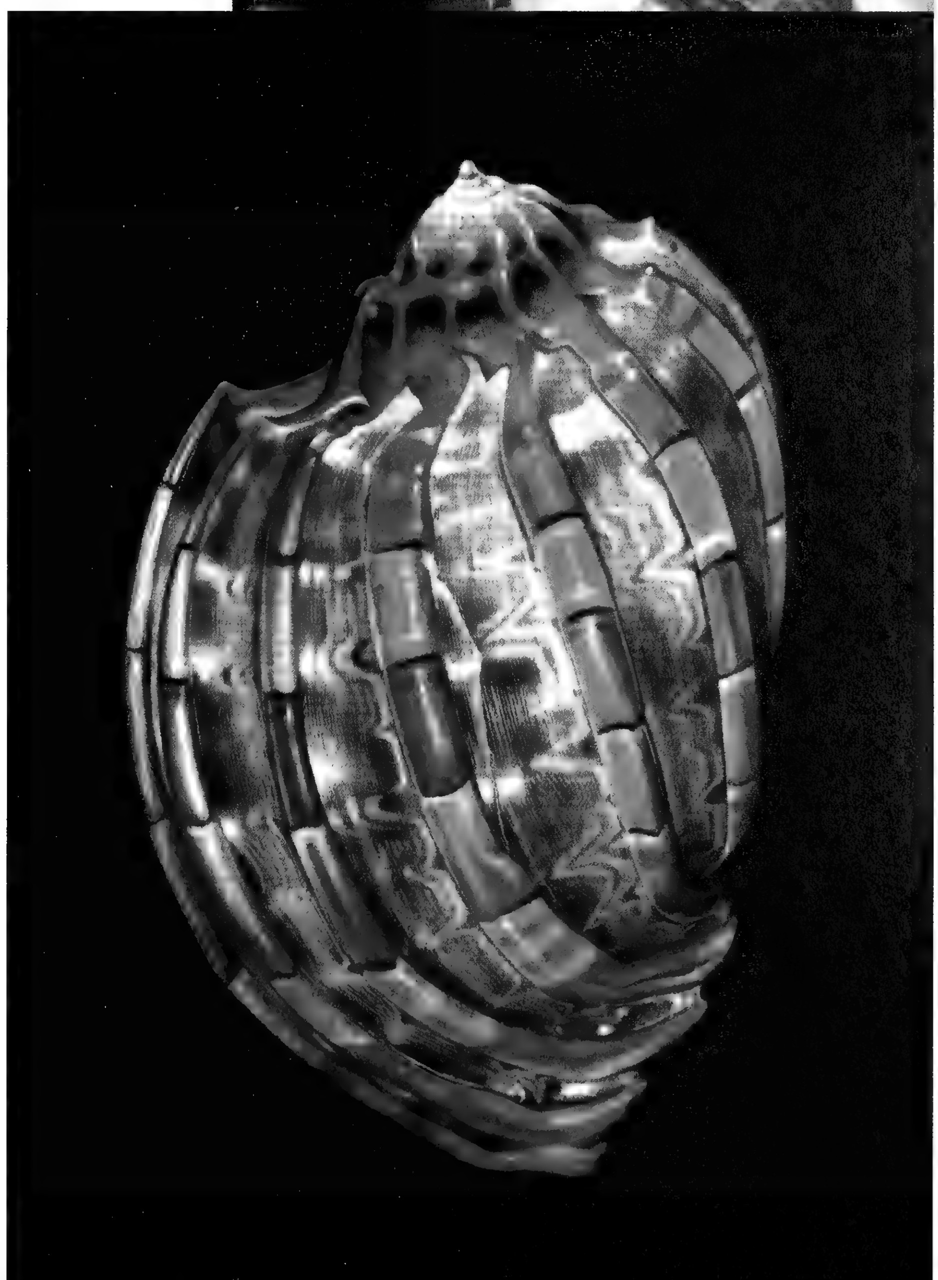
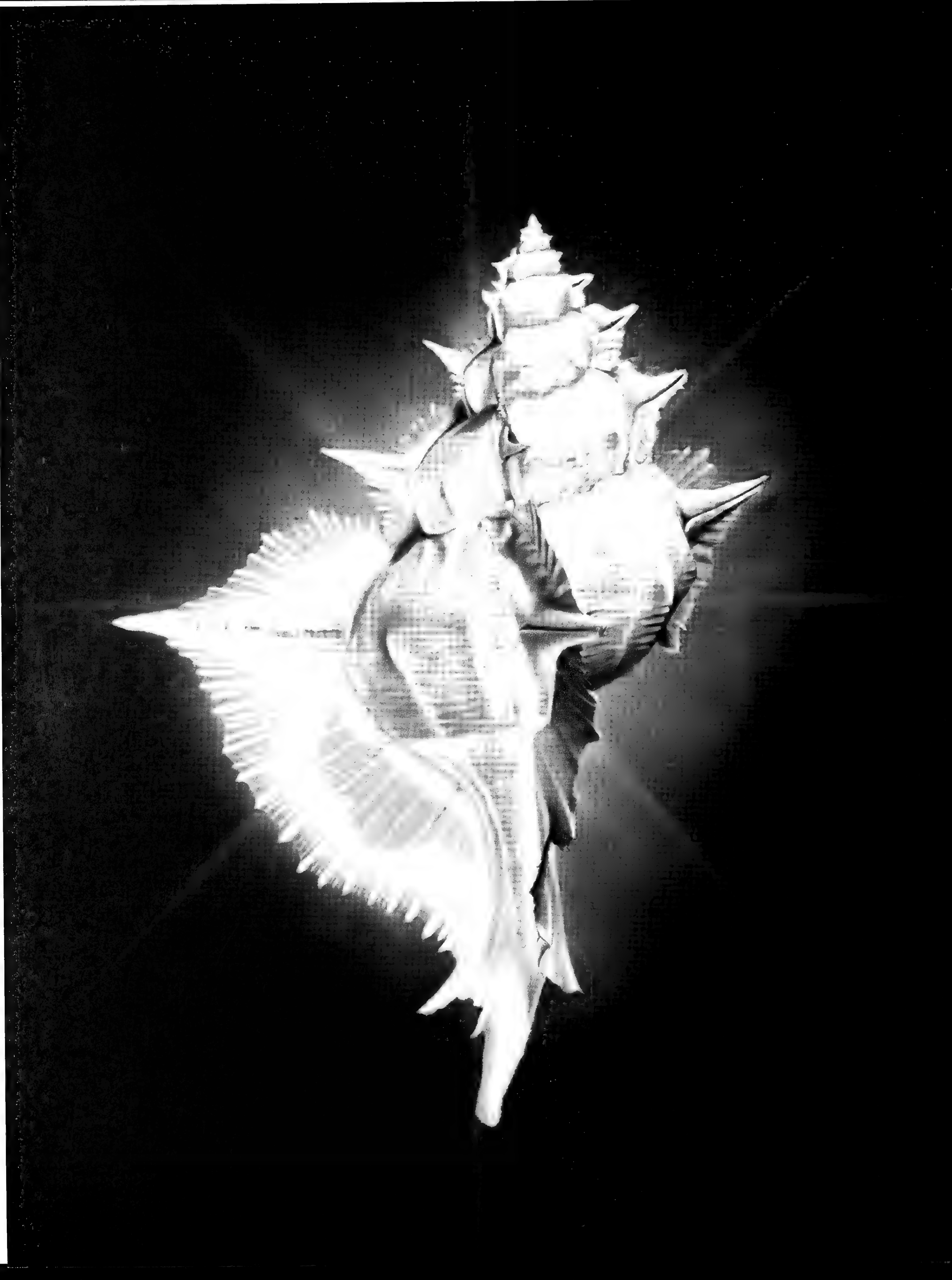


**Top right: Gregory at work on his latest shell painting, the imperial volute, *Aulica imperialis* (Lightfoot, 1786). Photograph by Jolivette Mecenas.**

**Bottom right: "Major Harp Shell: Crimson," heat set oil on canvas, 12"x16". Interestingly, this painting of a *Harpa major* Röding, 1798, has a surface flaw that is found on the original specimen used for the painting. Photograph by Jolivette Mecenas.**

**Back cover description on page 3.**



Vol. 35, No. 3, September 2007
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# American CONCHOLOGIST

Quarterly Journal of the Conchologists of America, Inc.

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 35, No. 3 September 2007**


In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***

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**Front cover:** ***Janthina janthina*** **(Linnaeus, 1758), 30mm, beached at Panama City, Florida, October 1970. The shell was scanned on an Epson 2400 flatbed scanner and then superimposed on a water background. See the article on** ***Janthina*** **by Robert Robertson on page 4. Image by Tom Eichhorst.**

**Back cover: close up of the mantle and siphon of** ***Tridacna maxima*** **(Röding, 1798), a common Pacific species that grows to just under a foot in length. This specimen was photographed during the day at 60 feet on a coral reef off one of the Fiji islands. This species and other giant clam species are now commercially cultured for use in the aquarium trade as well as for food. Photo courtesy of Charles Rawlings.**

**Editor's comments:**

I received the following comments from Robert Robertson, a frequent contributor to this magazine (see the *Janthina* article on page four).

Dear Tom,

Zvi Orlin in his follow-up on blood-suckers in the last *American Conchologist* (Vol. 35, No. 2, March 2007) mentioned *Tateshia yadai* Kosuge, 1986 but did not cite the paper or illustrate the shell. If you want to do an editorial follow-up to the follow-up (excessive?) the reference is:

Kosuge, S. 1986. Description of a new species of ecto-parasitic snail on fish (Gastropoda Olivacea), Bull. Inst. Malac., Tokyo, 2(5): 77-78, 91, pl. 30, figs. 1-4 [3 views of holotype shell and 1 paratype] and pl. 32, figs. 1-6 [1-5 radular teeth, 6 protoconch].

The shell looks to me more like that of a marginellid than of an olivid. It is unlike anything figured by Orlin.

Best Wishes, Robert

We have some excellent articles this month and I think every reader will be able to learn something new somewhere in this potpourri. This issue offers a look at: janthinid snails, little known US buccinids, two cowrie articles, Australian mollusks, two book reviews, introduced species, East Coast *Tagelus*, and a review of COA 2007 and preview of COA 2008.

An added word about introduced species. In an op-ed piece titled *Heavy Water* (New York Times, 4 Sep 2007), Henry L. Henderson writes that, "...the Congressional Office of Technology Assessment reports that environmental losses from introduced fish are $1 billion per year; from arthropods, $2.13 billion; and from mollusks, $1.3 billion. The San Francisco Bay is home to 234 alien species, or 90 percent of the bay's aquatic population." Obviously, introduced species are a serious threat. I should point out that the data quoted above is quite out-of-date as the Congressional Office of Technology Assessment closed in 1995, but the problem has certainly not gone away, and may, in fact, be worse. Individual state efforts against introduced species can be quickly found by searching for "introduced species" and the state in question on the Internet.

I would also like to point out that we have several new advertisers with this issue. So take a look at pages 14 to 17 and see if there is not a long-time supporter of COA or a new one that might have that shell you need. *American Conchologist* is supported by member dues (both collectors and dealers) as well as advertisements.

# *JANTHINA:* FLOATING *EPITONIUM* (WENTLETRAP) RELATIVES

**by Robert Robertson (photographs by the author unless noted otherwise)**

Postlarval *Janthina*, commonly called violet snails, live at the sea surface, drifting passively. Using their foot or podium, they create attached floats (rafts) of air bubbles enclosed in dried mucus from which they hang with the spire pointed downwards. Some individuals though, lack floats when they are crawling and feeding on their floating prey. Without its own float or when not on some floating object, the animal cannot return to the surface. Yet empty postlarval *Janthina* shells have never been recovered from deep-sea bottom sediments. Countless *Janthina* have been found washed ashore, but what happens to the shells after death in mid-ocean? Do the calcareous shells dissolve at depths where seawater can be acidic? It has been claimed that after death, 98% of all pteropod and heteropod shells dissolve while sinking (Newman 1998).

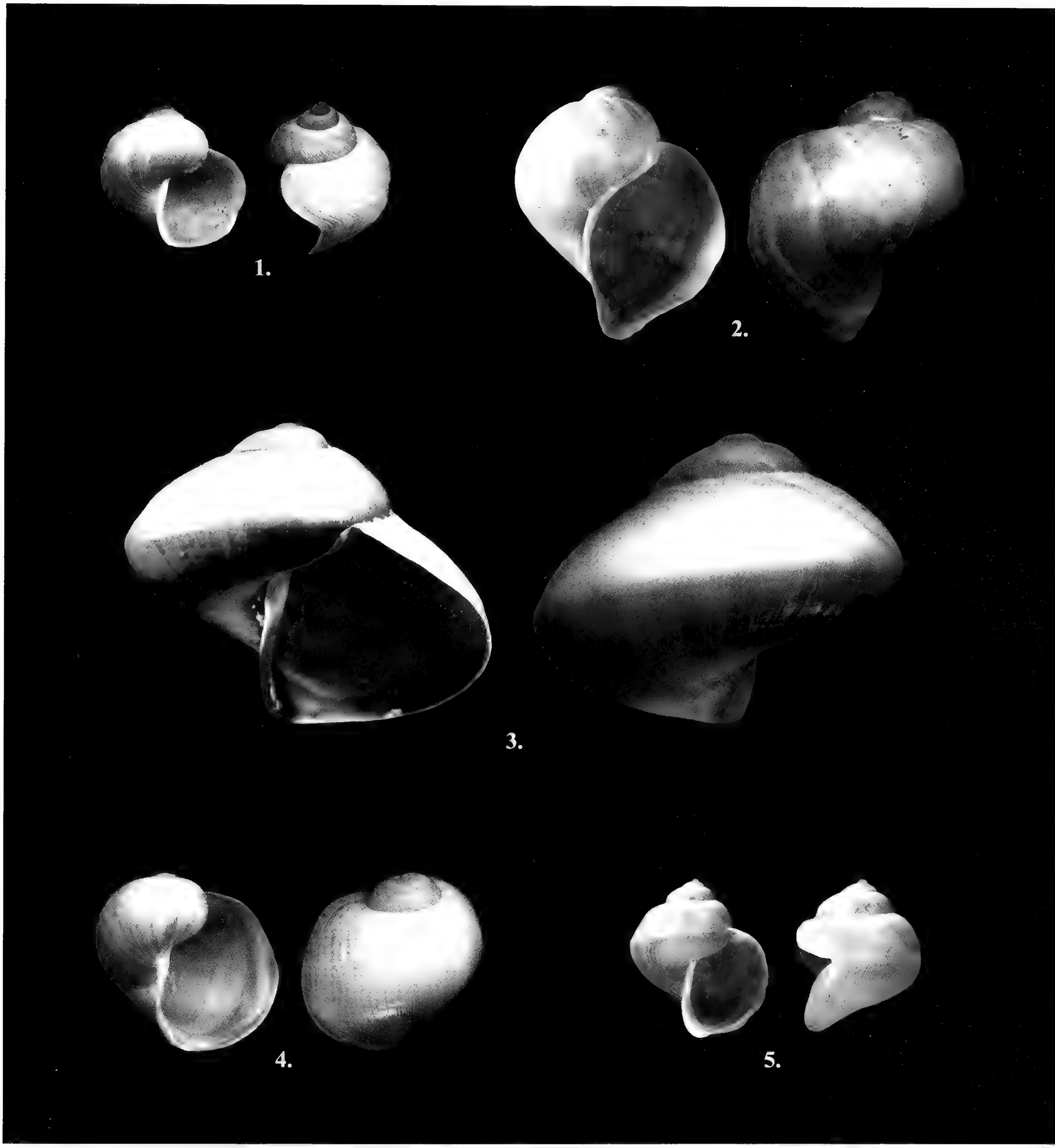
Very few animals of any kind are restricted to life at the sea surface (pleuston). Those that are include two nudibranchs (*Glaucus* and *Fiona*), a barnacle (*Lepas*), water-striding insects (*Halobates*), and surface-floating siphonophores (broadly so-called), hydrozoan coelenterates [=cnidarians] (e.g. Portuguese men-of-war, *Physalia*), on which *Janthina* feeds. The cerithioidean *Litiopa melanostoma* Rang 1829 lives in floating gulfweed (*Sargassum*) but is unrelated to *Janthina* (Lalli & Gilmer 1989: fig. 1d is *Litiopa*, not *Recluzia*). *Janthina* lives in sometimes-vast shoals in all tropical and warm temperate oceans and seas, often far from land. Strong sustained westerly winds sometimes cast them ashore on the southwestern British coasts, along with their prey. A word of caution: live and even "dead" siphonophores are highly venomous (especially *Physalia*, the Portuguese man-of-war) and should never be touched.

*Janthina* Röding 1798 is classified in the family Janthinidae. Both "*Ianthina*" and "Ianthinidae" are misspellings. Named by Roding in 1798, it was first misspelled *Ianthina* by Lamarck a year later (1799). Various authors continued this misspelling and a web search will show it persists today. The only other genus in the family is *Recluzia* Petit 1853, a genus that also forms bubble-floats. The Janthinidae are placed next to the Epitoniidae (wentletraps) in the superfamily Janthinoidea (or Epitonioidea, or "Ptenoglossa" in part). The relationships of these with other gastropods are obscure. They are not related to the Cerithiopsidae or Triphoridae. The main epitoniid genus is *Epitonium* Röding 1798, but the only epitoniids that resemble a janthinid are in the genus *Alexania* Strand, 1928, which look somewhat like miniature *Recluzia*. Like all epitoniids, *Alexania* is a bottom dweller that does not form bubble-floats (Robertson 1997). It shares some characters with *Recluzia.* The shell and body of *Recluzia* are brown, and the shell but not the body of *Alexania* is usually spirally banded brown. *Janthina* and *Recluzia* lack the axial shell ribs characteristic of most epitoniids and are probably worldwide in occurance.

**Floating siphonophore, Portuguese Man-of-War (*Physalia physalis* (Linnaeus, 1758)). One of three colonial coelenterates fed on by *Janthina*. Photo courtesy of U.S. Department of Commerce, National Oceanic and Atmospheric Administration.**

**Insert: Dead Portuguese man-of-war washed ashore on Bermuda, April 1970. Such "dead" specimens can still deliver a painful sting as the stinging mechanism remains active for quite some time. Beached specimens are best left alone.**

Adult *Janthina* shells are thin, fragile, and violet or purple, unlike any epitoniid shells, although a few of these are brown in whole or in part. Postlarval *Janthina* lack the operculum and functional external eyes of *Epitonium*, and differ anatomically with bifid tentacles and a frill (epipodium) around the foot. The dissimilarities between the morphology of *Janthina* and *Epitonium* shells and differences in their modes of life naturally raise questions




The five recognized species of *Janthina* (of the 49 described species):
1. *Janthina exigua* Lamarck, 1816, 13mm, recognized by it deep outer lip sinus and coarse axial sculpture;
2. *Janthina globosa* Swainson, 1822, 22mm, recognized by the siphonal extension of the outer lip and its non-globose shape;
3. *Janthina janthina* (Linnaeus, 1758), 27mm, recognized by its two-toned coloration and more angular shape;
4. *Janthina pallida* Thompson, 1840, 16mm, recognized by it globose shape and pale coloration; and
5. *Janthina umbilicata* d'Orbigny, 1841, 14mm, recognized by its deep outer lip sinus (similar to that found in *J. exigua*), mid-whorl spiral keel, and lack of course axial sculpture. *Janthina* are pelagic and found worldwide in tropical and warm temporate waters, most commonly washed ashore after a storm. Newly collected shells are surprisingly strong, but quickly become brittle and easily broken after drying.

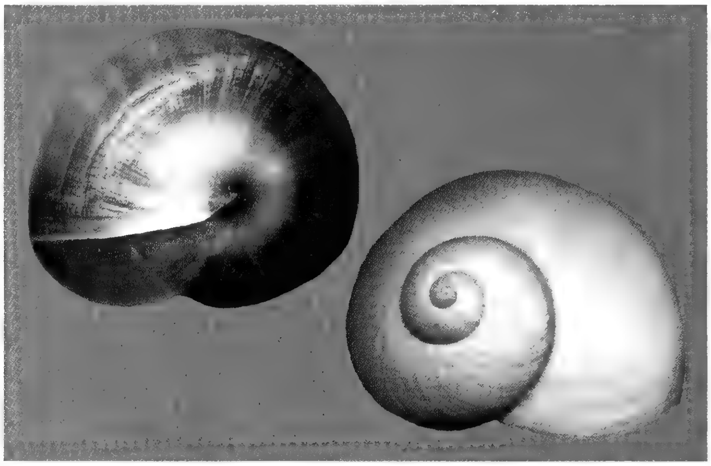
as to whether they are, in fact, related. Why are they next to each other in modern classifications, books and collections?

Forty-nine species of *Janthina* have been described, and all descriptions were shell-based. Laursen (1953) recognized five valid *Janthina* species. For these, other authors have proposed six subgenera on the slimmest of conchological pretexts. *J. janthina* (Linnaeus 1758) is the type-species of the genus and is clearly distinct, although its spire height (and hence length to width ratio) varies more than in all the other species combined. Low-spired shells have angled columellar walls, while these are sinuous on high-spired ones (as in all other *Janthina*). *J. janthina* is typically the most common and generally the largest species, with a stated size up to 37mm (although *J. globosa* has been recorded at 38mm+). Unlike other *Janthina*, there is never an outer lip sinus on *J. janthina*, although there may be an angle low on the body whorl. *J. janthina* is also distinct in having counter-shading (darker coloring on the base, which is the upper side when the animal is alive and floating spire downwards). This makes the shell less conspicuous to predators in the air above (birds) and the water below (fishes). Many fish are also counter-shaded, being darkest dorsally. It does not help to identify a shell, but *J. janthina* is the only viviparous species in the genus (the others are oviparous).

Laursen (1953) lists four other *Janthina* species: *J. globosa* Swainson 1822 [Jan.] (*J. prolongata* de Blainville 1822 [Aug.] is a synonym), *J. pallida* Thompson 1840, *J. exigua* Lamarck 1816, and *J. umbilicata* d'Orbigny 1841. My wife and I have cursorily studied the large collection of shells at the Academy of Natural Sciences Philadelphia (ANSP), trying to reconcile Laursen's characterizations with identifications made by others. On all of these shells there is a variably developed outer lip sinus, the depth of which seems not to affect the strength of a spiral peripheral or supraperipheral keel marking its previous positions. *J. globosa* attains the largest sizes (reaching a stated height of 38.5mm), and generally has a somewhat flattened spire, an indented suture, a slightly tabulate shoulder, and a mucronate apex. The outer lip is flared, the sinus is slight, and in apertural view the base is roundly angled or produced into a short siphon. *J. pallida* is frequently confused with *J. globosa* but is smaller, generally only about 15mm high or less (but the stated height is up to 24mm). The spire is low and rounded, with the apex hardly visible in apertural view, the suture is not indented, the outer lip is not flared, and a sinus is slight to lacking. In apertural view the base is rounded or angled as in *J. globosa*, sometimes even with a slight siphon. According to Laursen the radular teeth of *J. globosa* and *J. pallida* differ greatly, but the shells can be difficult to distinguish from one another.

*J. exigua* and *J. umbilicata,* are 14mm high or less (although the former is stated to reach 17mm). They are highly distinct in having a deep outer lip sinus, deeper and more angled in *J. umbilicata*. Spire height of *J. exigua* and *J. umbilicata* is similar, although Laursen believed it higher in the former. According to Laursen, axial sculpture is much more coarsely developed on *J. exigua* than on *J. umbilicata*. These two species are also difficult to distinguish from one another.

Clearly, more taxonomic work is needed on *Janthina*. I doubt that shells alone, however carefully they are restudied, will yield final answers. The animals need to be studied more carefully when they are alive (Laursen never saw a living *Janthina*!). New techniques such as micro-anatomy, molecular systematics, and cladistics are needed.



**Top: *Janthina janthina* with bubble float, seen from above, Bermuda, April 1970, scale marks in mm.**

**Middle: *Janthina janthina* showing the counter-shading that helps camouflage this species.**

**Bottom: *Janthina pallida* feeding on a floating *Velella velella* (Linnaeus, 1758), also known as a "by-the-wind sailor," Bermuda, April 1970. Of interest here is the lack of a bubble float.**

Both janthinids and epitoniids feed on, and perhaps digest only, living coelenterate (cnidarian) soft body tissues. Most other gastropods are deterred from doing so by the stinging capsules (nematocysts) of coelenterates. There are, though, other specialized marine gastropods that are also adapted to overcome being stung. Among these other coelenterate-feeders are ovulids, the muricid *Drupella*, muricid coralliophilines, architectonicids, certain whole groups of nudibranchs, and various others.

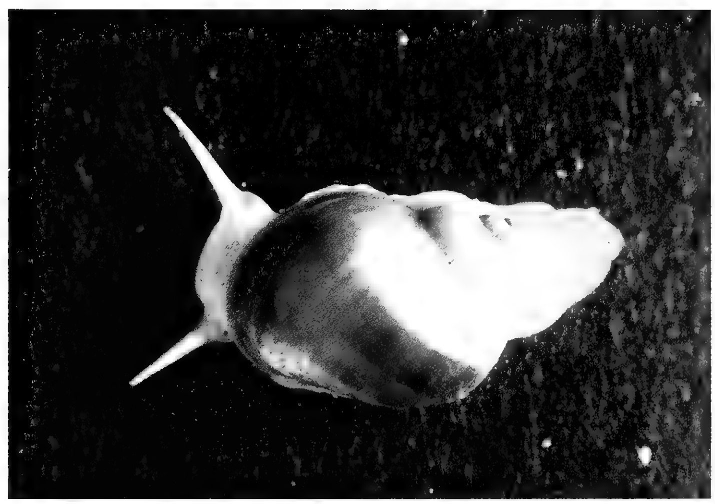
*Janthina* feed on the floating siphonophore Portuguese man-of-war (*Physalia physalis* (Linnaeus 1758)) and the chondrophores by-the-wind-sailors (*Velella velella* (Linnaeus 1758) and *Porpita porpita* (Linnaeus 1758)). The very rare *Recluzia* feeds on the equally rare floating brown sea anemone *Mynias* (not "*Minyas*") (Abbott, 1968, 1986: 92-93). Epitoniids feed on bottom-dwelling (benthic) sea anemones, zoanthids, stony corals, and (very rarely) sea pansies (*Renilla*), all of which are anthozoan coelenterates. *Janthina* differ in feeding only on the floating hydrozoans mentioned earlier.

Janthinoideans have a radula different from those of most other gastropods. It is called ptenoglossan and is a short and wide ribbon bearing numerous fang-like teeth that change shape and size latitudinally. The *Janthina* mouth lies at the end of a short, massive and extensible snout (proboscis). In their resting positions the teeth lie flat. Remarkably, during feeding the radula is spread laterally and it and the associated structures are pushed out through the mouth. Simultaneously, the teeth are pulled erect. There are large, paired, lateral jaws that may bite off the pieces of food. The teeth take hold of these, the radula infolds, and the food is pulled in through the mouth. The *Epitonium* proboscis is much longer and is wholly acrembolic (turning inside out like a sock). The mouth lies at the everted tip. It is unknown whether during feeding the radula comes out through the mouth; *i.e.* is at least terminally like *Janthina* in miniature. The feeding structures and functions of living *Epitonium* have yet to be studied and compared properly.

*Janthina* bite off large pieces of siphonophore tissue at a time. A 20mm wide *Janthina* can eat most of a 20mm long *Velella* in 25 minutes, and can probably repeat this every few days. *Janthina* is so voracious that it is thought to sometimes cannibalize, as attested by *Janthina* radulae in its gut. Whole barnacles (*Lepas*) can also be swallowed. It is puzzling how these large and solid objects pass through the narrow esophagus. *Epitonium* is a predator or parasite depending on its total size relative to that of its prey or host and if or how quickly consumption is consummated. The distinction can vanish when the prey or host is colonial. When a parasite, *Epitonium* sometimes nibbles off and swallows only one tentacle at a time. *Physalia, Velella* and *Porpita* are colonies of specialized individuals and *Janthina* tends to be a predator on all of them. Neither genus ingests body fluids to any extent.

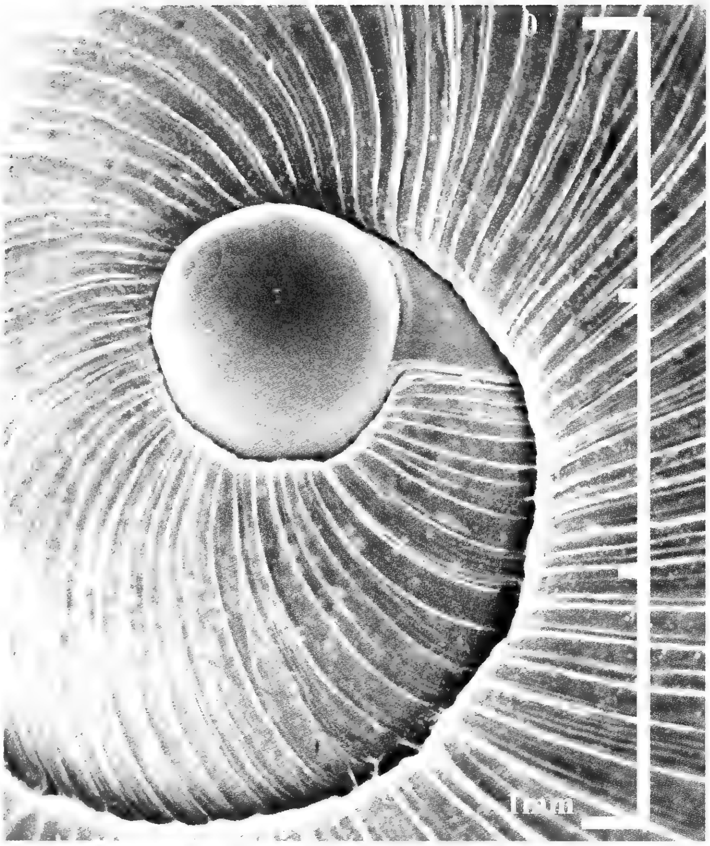
*Janthina* and *Epitonium* are usually but apparently not consistently protandric, meaning that individuals first become males, and then, generally when older and larger, females. Males, females and simultaneous hermaphrodites of the same sizes, sterile individuals, and very large males have also been reported. A male is often associated with a female. The slipper limpet *Crepidula* is another protandric gastropod but is not related. All *Janthina* and nearly all epitoniid species lack penises and transfer sperm with distinctive "spermatozeugmata." These are greatly enlarged and modified sperm with numerous functional smaller sperm attached

***Recluzia* sp., 18mm, Port Alfred, South Africa, ANSP #232590, feeds on a floating brown sea anemone.**



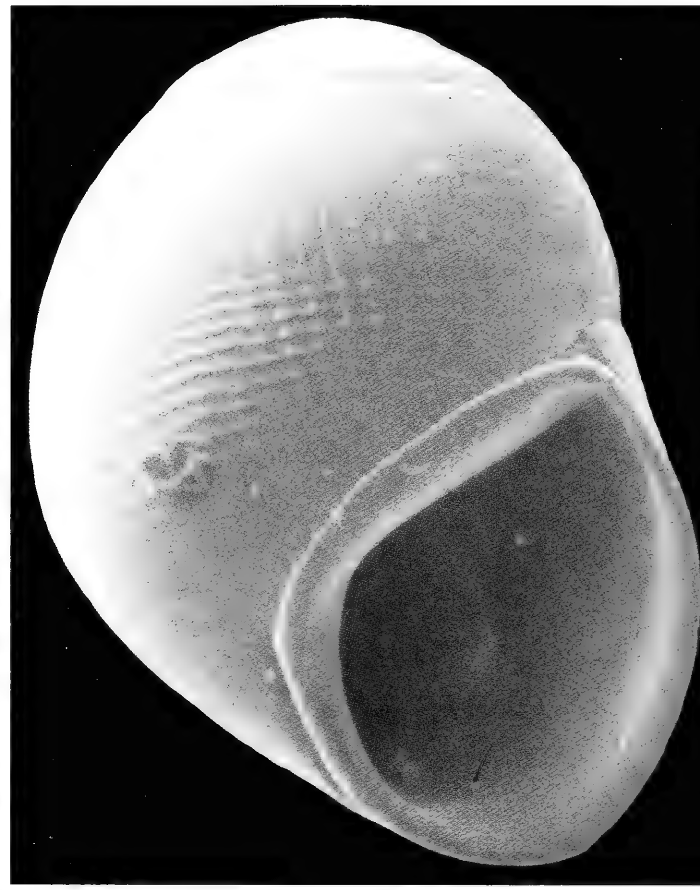
***Alexania natalensis* (Tomlin, 1926), female, <5mm, south India, 1964, showing some shell structural similarities (discounting size) to *Recluzia*.**

***Gyroscala lamellosa* (Lamarck, 1822) showing long everted proboscis feeding on benthic sea anemone *Phymanthus crucifer* (Leseuer, 1817), Miami, photo by Neal Leeman.**




**Above: S.E.M image of *Janthina janthina* protoconch and part of teleoconch, from Robertson (1971). Scale bar is 1mm. Protoconch is approximately 0.34mm.**

**Below: Color scan of Janthina janthina protoconch and part of teleoconch. The strong axial sculpture smooths out after 1.5 whorls. Image by T. Eichhorst.**



**S.E.M. image of larval shell of *Janthina pallida*, < 0.30mm, from Robertson (1971).**

to them. Spermatozeugmata serve for rather passive (floating) transport to a juxtaposed or nearby female ("pseudocopulation"). They are vibratile but do not swim.

The veligers of *J. janthina* develop in the female reproductive tract, and are then shed in packets from which the swimming larvae emerge. The other four species lay egg capsules that are attached to and hang below their bubble-floats. Swimming larvae hatch directly from these capsules. The larvae of all five species live in the subsurface plankton. *Recluzia* lays similar capsules. Anatomically, *Janthina* and *Epitonium* veligers are almost identical. Their larval shell (protoconch) microsculptures, best seen with a scanning electron microscope, are also almost identical, with axial lines that at regular intervals are wavy. Some non-*Epitonium* epitoniids have different protoconch sculptures.

The often mixed-species shoals of *Janthina* are highly seasonal. The observations and photographs here are from Bermuda in early April. The postlarval stage is likely to last a much shorter time than the larval stage, with the animals remaining as planktonic larvae for most of a year. Postlarval growth is likely to be exceedingly rapid, as it is in at least some epitoniids (Robertson 1983b). *Physalia* also grows rapidly. The larval shell of *Epitonium* is water-repellent, and this causes some larvae to become trapped in the water surface (Collin 1997). In unstirred laboratory cultures, these larvae die. Wave action may prevent this. The larval shell of *Janthina* is likely also to be water-repellent. This would be advantageous if it aids metamorphosis into a surface-dwelling float-

making mollusk. Could larval water-repellency have triggered the adaptive radiation into the pleustonic janthinid life style?

Both *Janthina* and *Epitonium* have a gland in the larva and postlarva that secret a copious amount of purple dye. The dye, body, and shell pigments of *Janthina* apparently are the same chemically. This dye is totally different from the superficially similar Tyrian purples secreted by muricoideans. Despite prevailing current scientific opinions to the contrary, there are data showing that Tyrian purple is secreted by a different gland, has a different chemical composition, is in solution, and is an anesthetic used to help capture prey. Janthinoideans and muricoideans are very widely unrelated, and in janthinoideans the dye is finely particulate and is used defensively.

Charles T. Simpson (1897) gives an amusing account of collecting washed-ashore janthinas with no container to hold the shells. He filled every pocket bursting full with janthinas with the result of staining his handkerchief, straw hat, linen coat, and white duck pants purple. Even his shoes were filled with purple dye. He had to throw away his ruined suit.

Related gastropods do not necessarily have similar shells. In the case of janthinids and epitoniids there are rare seemingly transitional forms (*Recluzia* and *Alexania*). The differences are more apparent than real, however, relating mostly to their different pleustonic and benthic life styles. Most of the anatomical differences relate mainly to their different postlarval feeding modes.

The oldest epitoniid fossils date from the Jurassic, and unquestioned janthinids only from the Miocene. The high number of biological similarities between them enumerated above suggests to me that most are synapomorphies, i.e. retaining ancestral traits derived from a common fossil ancestor, the identity of which has yet to be convincingly demonstrated. The Janthinidae could have differentiated from the Epitoniidae before the Miocene as janthinids only rarely fossilize. Recent shells tend to be curiously ephemeral, as many a collector has found when trying to clean old specimens. There seem to be very good reasons for *Janthina*, *Epitonium* and related genera to be classified near each other.

I thank Dr. Daniel L. Graf, Betty Ruggeri, and Harriet Robertson for their help with this article.

**REFERENCES (SELECTED)**

**Abbott, R.T.** 1968 and 1986. Seashells of North America. Golden Press, New York.

**Bieri, R.** 1966. Feeding preferences and rates of the snail, *Ianthina* … and the food web in the marine neuston. Publs. Seto Mar. Biol. Lab., 14: 161-170.

**Cheng, L.** 1975. Marine pleuston - animals at the sea-air interface. Oceanogr. Mar. Biol. Ann. Rev., 13: 181-212.

**Collin, R.** 1997. Hydrophobic larval shells: another character for higher level systematics of gastropods. Jour. Moll. Stud., 63: 425-430.

**Collin, R.** 2000. Development and anatomy of *Nitidiscala tincta* (Epitoniidae). Veliger, 43: 302-312.

**Comfort, A.** 1961. On the pigment of *Ianthina janthina* L. Jour. Mar. Biol. Assoc. United Kingdom, 41: 313-318.

**Graham, A.** 1954. Some observations on the reproductive tract of *Ianthina janthina* (L.). Proc. Malac. Soc. London, 31: 1-6.

**Graham, A.** 1965. The buccal mass of ianthinid prosobranchs. Proc. Malac. Soc. London, 36: 323-338.

**Lalli, C.M. & R.W. Gilmer.** 1989. Pelagic snails; the biology of holoplanktonic gastropod mollusks. Stanford University Press, Stanford, California.

**Laursen, D.** 1953. The genus *Ianthina*; a monograph. Dana-Report, 6(38): 1-40.

**Neville, B. & T. Eichhorst (photos).** 2001. The wentletraps (Epitoniidae): a study in white and white. Amer. Conchol., 29(1): 28-31.

**Newman, L.** 1998. Holopelagic gastropods. In: Mollusca: The Southern Synthesis. Fauna of Australia. CSIRO Publishing, Melbourne, 5(A): 46-49.

**Robertson, R.** 1971. Scanning electron microscopy of planktonic larval marine gastropod shells. Veliger, 14: 1-12.

**Robertson, R.** 1981. Protandry with only one sex change in an *Epitonium* (Ptenoglossa). Nautilus, 95: 184-186.

**Robertson, R.** 1983a. Observations on the life history of the wentletrap *Epitonium albidum* in the West Indies. Amer. Malac. Bull., 1: 1-12.

**Robertson, R.** 1983b. Extraordinarily rapid postlarval growth of a tropical wentletrap (*Epitonium albidum*). Nautilus, 97: 60-66.

**Robertson, R.** 1993. Two new tropical western Atlantic species of *Epitonium*, with notes on similar global species and natural history. Nautilus, 107: 81-93.

**Robertson, R.** 1997. *Alexania* (Epitoniidae) in Texas, and parallels with *Recluzia* (Janthinidae). Texas Conchologist, 34: 10-18.

**Robertson, R.** Accepted. Taxonomic occurrences of gastropod spermatozeugmata…. Amer. Malac. Bull.

**Robertson, R. & P.L. Schutt.** 1984. Golden wentletraps on golden corals. Hawaiian Shell News, 32(11): 1, 4.

**Simpson, C.T.** 1897. The ianthinas. Nautilus, 10: 133-134.

**Zahl, P.A.** 1952. Man-of-war fleet attacks Bimini. Natl. Geogr. Mag., 101: 185-212.

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# Small Western Atlantic Buccinidae. Part 1. The Genus *Bailya* M. Smith, 1944

## by G. Thomas Watters (image by the author)

Collectors and professionals alike are often perplexed by the numerous smaller species of the Buccinidae that occur in our waters. Purchasing specimens from dealers is often like Christmas morning, you never know what is going to be in that package. Because malacology has advanced a ways beyond *American Seashells*, it is time to try to make sense of these conchological "little brown birds." This first installment deals with a group near and dear to me, the genus *Bailya*.

*Bailya s.s.* was erected by Maxwell Smith (1944) with the Pacific species *B. anomala* (Hinds, 1844) as its type. *Bailya* (*Parabailya*) was named as a subgenus of *Bailya* by myself and John Finlay (1989) with *B. weberi* (Watters, 1983) as its type. It may deserve generic status. *Parabailya* differs from *Bailya* in lacking the pronounced cancellate sculpture.

*Bailya s.l.* is similar to several other small buccinid genera: *Monostiolum*, *Antilliophos*, *Parviphos*, and "*Engina*," among others. Its hallmark is the sinuous but unbroken columella. In the other genera the columella is noticeably angled at the junction with the siphonal canal. Although *Bailya* may have a small denticle bounding the posterior canal, it lacks any other teeth or plications on the columella. The protoconch is blunt, composed of 1.5 rounded whorls, and is more or less identical in all species. The teleoconch sculpture consists of three sizes of spiral threads in the pattern A-C-B-C-A, with A larger than B, B larger than C. Axial ribs are pronounced in *Bailya s.s.* but very subdued in *Bailya* (*Parabailya*). In *Bailya s.s* the intersections of the axial and spiral sculpture form blunt points. There is a single, flaring terminal varix.

*Bailya* is limited to the western Atlantic Ocean from Florida to the southern Caribbean Sea, with a single species in the tropical eastern Pacific Ocean. *Bailya* species are found from intertidal depths to at least 73m, often associated with coral rubble. They are not uncommon but it is rare to find more than a few specimens at any given location. The genus is known from the Pliocene of Florida from the species *Bailya roycei* (Smith, 1938). Only four Recent species have been described.

*Bailya (Bailya) intricata* (Dall, 1884) (Figs. 1-3). Dall described this species as a *Phos* from Key West. It ranges from south Florida through the Gulf of Mexico, Central America to Panama, the Greater Antilles, and the Bahamas. I have no records from South America and the Lesser Antilles. Specimens attain 17mm in length.

*Bailya* (*Bailya*) *parva* (Adams, 1850) (Figs. 4-7). C.B. Adams described this species as *Triton parva* from Jamaica. It ranges from south Florida through the Gulf of Mexico, Central America to Colombia, the Greater Antilles, and the Bahamas. Specimens reach 17mm in length.

*Bailya parva* and *B. intricata* are very similar conchologically. Generally *B. parva* has a shorter spire and coarser sculpture and is often more colorful. *Bailya intricata* is usually white, whereas *B. parva* may be tan or brown with a wide white band below the periphery.

*Bailya* (*Bailya*) *anomala* (Hinds, 1844) (Figs. 8, 9). Although not a western Atlantic species, it is included here as the only other species of the genus and the type of *Bailya*. Hinds was apparently perplexed by the taxonomic placement of this species, which seemed "anomalous." It ranges from Guaymas, Mexico, to at least Panama. It is the largest of the genus (to 21mm), with the most intricate cancellate sculpture. The color bands may be broken into a series of spots.

*Bailya* (*Parabailya*) *weberi* (Watters, 1983) (Figs. 10, 11). This species was originally described as *Caducifer* (*Monistiolum*) *weberi* from Looe Key, Florida Keys. After its publication John Finlay wrote me suggesting that the species might be better placed in *Bailya*. He was correct and that began the study of *Monostiolum* that John and I published in 1989. Beu & Maxwell (1987) unfortunately stated that *weberi* "is almost certainly [*Monostiolum*] *tessellatum*." This error was uncritically perpetuated by Turgeon *et al.* (1998). *Monostiolum tessellatum* (Reeve, 1843) is a different species in a different genus that will be dealt with in a later installment of this series.

*Bailya weberi* is the most rarely encountered species of the genus despite its wide range. Records are scattered across the western Atlantic from the Florida Keys, Cuba, and Belize. It may occupy deeper water than either *B. intricata* or *B. parva*. The holotype was from 73m, although other specimens are from 1-7m. Its color pattern suggests some of the more brightly colored *B. parva* specimens but the obsolete sculpture easily differentiates it from that species. *Bailya weberi* may be up to 16mm in length.

Some specimens from Roatan Island, Honduras, represent an undescribed species of *Bailya* (*Parabailya*) (Fig. 12). Their sculpture is more rugose than *B. weberi*, but less so than *B. parva* (which also occurs at Roatan Island, fig. 6), and all have a consistently different coloration. This represents yet another Honduran endemic, among others in the muricids, fasciolariids, marginellids, and many more.

Neither "*Bailya*" *marijkae* de Jong & Coomans, 1988, described from Curaçao, nor "*Bailya*" *milleri* Usticke, 1959, described from St. Croix, belong to *Bailya*. Both lack the continuous columella of *Bailya*. These species will be discussed in a later installment. Most specimens sold as *B. milleri* are actually *Parviphos adelus* (Schwengel, 1942).


Literature cited:

**Adams, C. B.** 1850. Descriptions of supposed new species of marine shells, which inhabit Jamaica. *Contributions to Conchology* 4:56-68.

**Beu, A.G. & Maxwell, P.A.** 1987. A revision of the fossil and living gastropods related to *Plesiotriton* Fischer, 1884 (family Cancellariidae, subfamily Plesiotritoninae n. subfam.). *New Zealand Geological Survey Paleontology Bulletin* 54:1-140.

**Dall, W. H.** 1884. On a collection of shells sent from Florida by Mr. Henry Hemphill. *Proceedings of the United States National Museum* 6(384):318-342, pl. 10.

**Smith, M.** 1944. *Panamic Marine Shells.* Tropical Photographic Laboratory, Winter Park, FL. 127 pp.

**Turgeon, D. D. et al.** 1998. Common and scientific names of aquatic invertebrates from the United States and Canada: Mollusks, 2nd ed.. *American Fisheries Society Special Publication 26.* American Fisheries Society. Bethesda, Maryland, USA. 526 pp.

**Watters, G.T.** 1983. A new species of *Caducifer* (*Monostiolum*) from the western Atlantic (Buccinidae). *Nautilus* 97:125-128.

**Watters, G.T. & Finlay, C.J.** 1989. A revision of the western Atlantic Recent species of the genus *Monostiolum* Dall, 1904, and *Bailya* (*Parabailya*) new subgenus (Gastropoda: Buccinidae). *Veliger* 32:47-59.



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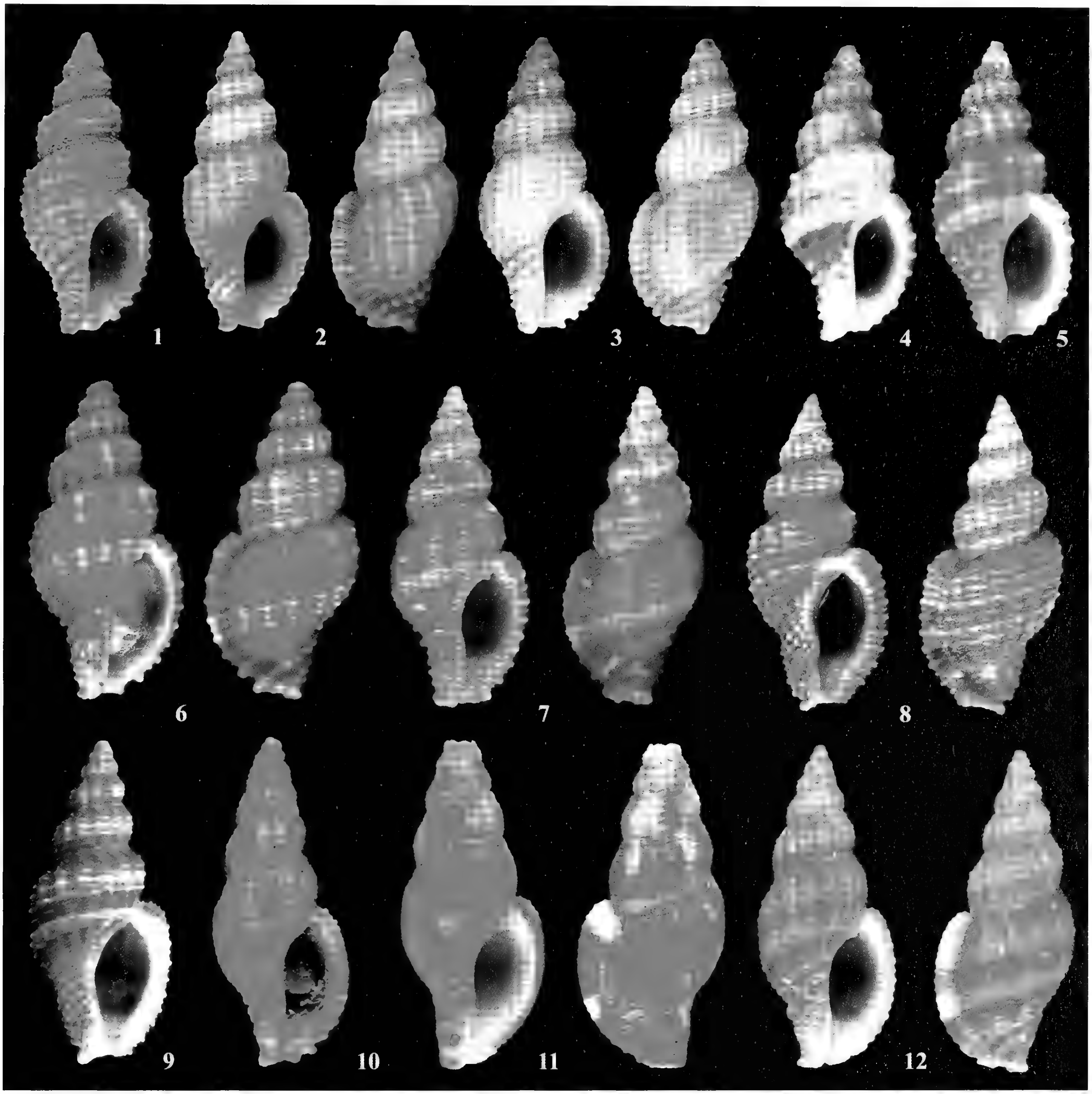



Figs. 1-3. *Bailya intricata* (Dall, 1884). Fig. 1. West Summerland Key, Florida Keys, 17mm. Fig. 2. 2.7m, Eleuthera, Bahamas, 12mm. Fig. 3. 1m, Ambergris Caye, Belize, 13mm.

Figs. 4-7. *Bailya parva* (Adams, 1850). Fig. 4. 4m, Cayo de San Andres, Colombia, 17mm. Fig. 5. 3m, southern Dominican Republic, 13mm. Fig. 6. 2.5m, Roatan Island, Honduras, 15mm. Fig. 7. subtidal, Negril, Jamaica, 14mm.

Figs. 8,9. *Bailya anomala* (Hinds, 1844). Fig. 8. Isla Pedro Gonzales, Panama, 17mm. Fig. 9. 2m, Puerto Vallarta, Mexico, 21mm.

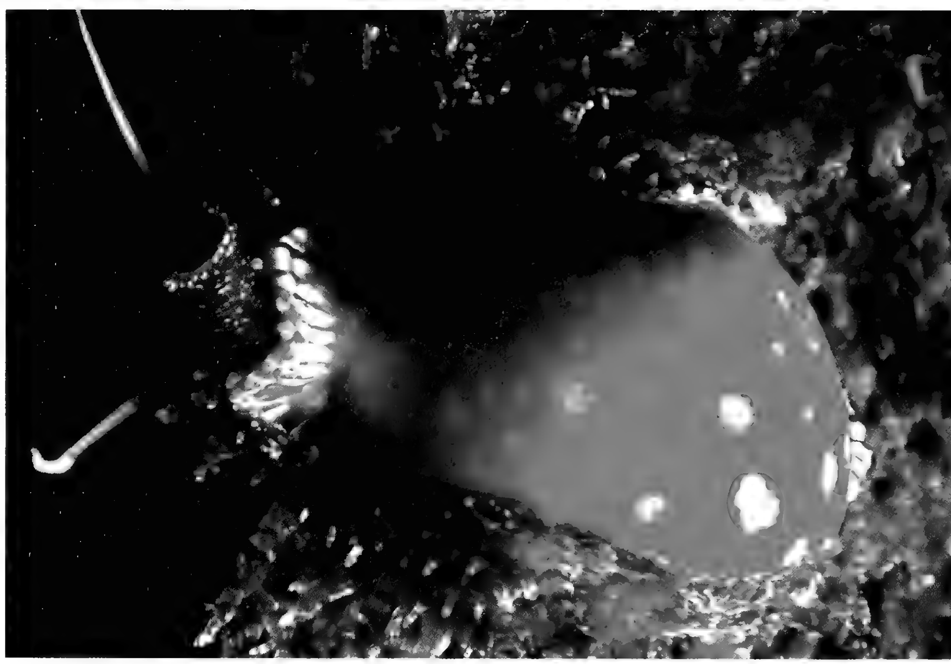
Figs. 10,11. *Bailya weberi* (Watters, 1983). Fig. 10. 6m, Cay Culken, Belize, 16mm. Fig. 11. 7m, Maria la Gorda, Cuba, 14mm.

Fig. 12. *Bailya* sp., intertidal, Roatan Island, Honduras, 14mm.

# *Erosaria guttata* (Gmelin, 1791): the Great Spotted Cowrie

By

Charles E. Rawlings



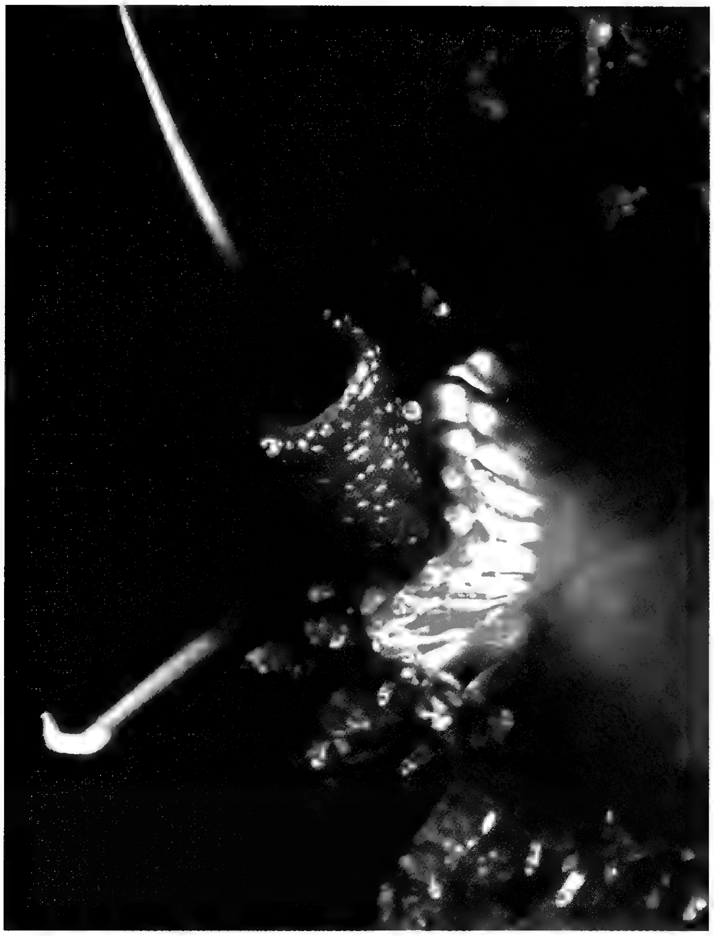
To seashell collectors there is a short list of shells that compose a "Holy Grail" of collectable shells. Shells like: *Conus gloriamaris* Chemnitz, 1777 (glory-of-the-sea cone), *Volutoconus bednalli* (Brazier, 1878) (Bednall's volute), *Epitonium scalare* (Linnaeus, 1758) (precious or emperor's wentletrap), were at one time extremely difficult for a collector to obtain and represented the epitome of collectable shells. Cowries on this short list include: *Barycypraea fultoni* (Sowerby, 1903) (Fulton's cowrie), *Lyncina broderipii* (Sowerby, 1832) (Broderip's cowrie), and *Erosaria guttata* (Gmelin, 1791) (the great spotted cowrie). Although most of these species are fairly common and easily obtainable today (*Lyncina broderipii* still commands a high purchase price), this was certainly not always the case. All are listed in Dance's "Rare Shells" and to this day retain a bit of mystique among collectors. These are the shells a collector should have. Photographs of these shells are common, but few have been photographed alive. Until recently, *Erosaria guttata* was one of those that had not been photographed alive.

*Erosaria guttata*, the great spotted cowrie or the drop-covered cowrie, is no longer considered rare, but is still a highly desirable shell due to its beauty and is still relatively uncommon. In May of 1962, the *Hawaiian Shell News* reported that there were only nine specimens of *Erosaria guttata* known to exist, and only one was in a collection in the United States. All had been dead-collected. At about this same time there were fewer than 50 *Conus gloriamaris* known (numbers 49 and 50 were reported in the January 1966 *Hawaiian Shell News*). In 1969 the same publication reported the first live-collected *Erosaria guttata*, a specimen trawled from 600 to 900 feet of water in the Philippines and subsequently sold for an undisclosed amount to a collector in San Francisco.

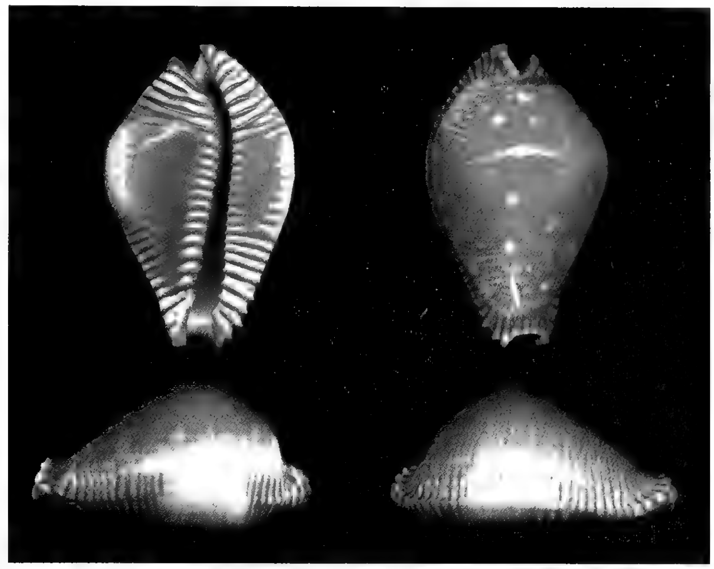
*Erosaria guttata* is considered by many collectors to be remarkable for its beauty, and few photographs really capture its essence. The shell possesses a high luster and varies from dark red to bright orange with varying size white "drops" or spots on the dorsum. The ventrum is white with varying amounts of dark red to reddish-brown markings that also color the well-developed teeth. The shell is pyriform and adults range in size from 32 to 70mm, with a record 87mm size recorded (Lorenz & Hubert, 2000).

The animal is similar in appearance to *Erosaria miliaris* (Gmelin, 1791), with irregular whitish spots on a dark chocolate-colored foot, proboscis, and siphon, and light tan tentacles. The mantle has multiple papillae extending over the entire body that vary between 10 and 20mm in length. The papillae are translucent and range from a dark purple to lavender. Most are tipped with white to yellow highlights.

*Erosaria guttata* can be found anywhere from the western Pacific to Melanesia. In the Philippines, they are most commonly found in the waters off Cebu and Bohol. Most specimens are trawled from depths of 80 to 200 meters of water, but they can be found as shallow as 25 meters and are occasionally washed ashore. Their



Detail showing *E. guttata* siphon, light tan tentacles, and the heavy sculpting of the siphonal canal.



*E. guttata* as it appears in collections. Note the characteristic white callous on the right side of the shell.

habitat seems to vary between a gravel, sand, and mud bottom (where they are trawled); to coral reef crevices and reef walls.

The specimen shown here was photographed on 18 September 2006, off Balicasag Island in the Philippines. It was photographed on coral rubble on a sand and mud substrate in approximately 75 feet of water. This shell demonstrates the classic coloration and is approximately 58mm in length. The animal was active during the day but actually demonstrated a proclivity for nocturnal activity. The local Filipinos keep any living *Erosaria guttata* they find alive in simple makeshift aquaria until shell dealers visit the area. They informed me that the animal is quite resilient and will live for weeks grazing through coral rubble in their aquaria. Hopefully, with this publication of what I believe is the first photograph of a living, *in situ Erosaria guttata*, I have provided the diving and shell collecting communities with a window into the mysterious life of this uncommon species.

References:
**Dance, S. Peter.** 1969. "Rare Shells," Faber & Faber, Ltd., London, United Kingdom, 128 pp.
***Hawaiian Shell News.*** Vol. X, May 1962.
***Hawaiian Shell News.*** Vol. XIV, January 1966.
***Hawaiian Shell News.*** Vol. XVII, July 1969.
**Lorenz, Felix & Hubert, Alex.** 2000. "A Guide to Worldwide Cowries," Conchbooks, Hackenheim, Gemany, 584 pp.
**Springsteen, F.J. & Leobrera, F. M.** 1986. "Shells of the Philippines," Carfel Seashell Museum Publications, Manila, Philippines, 377 pp.
**Walls, J.G.** 1979. "Cowries," Second Edition, Revised, T.F.H. Publications, Neptune, New Jersey, U.S.A., 286 pp.

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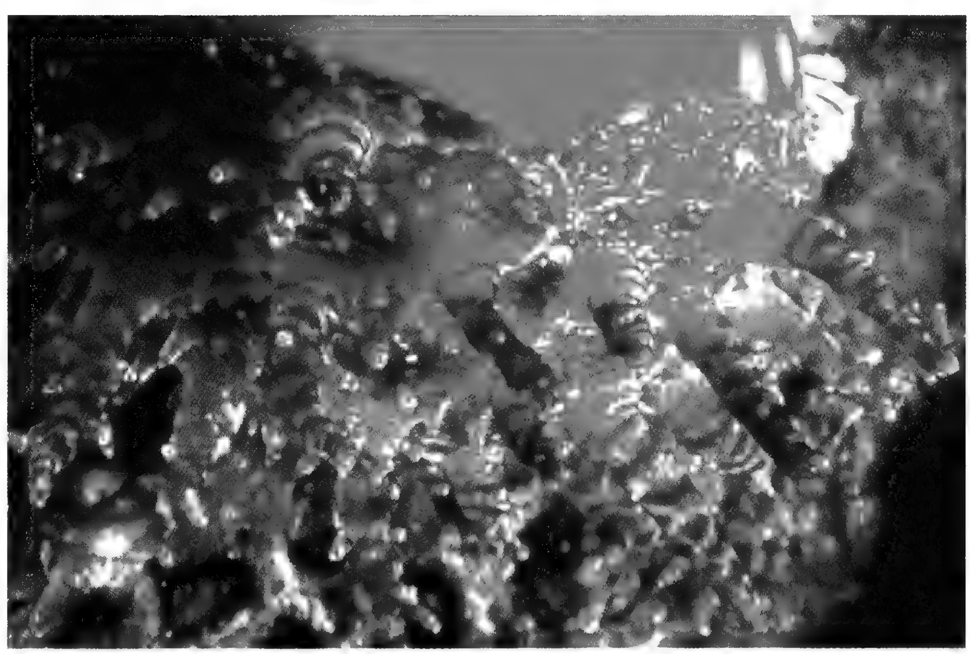

Detail of the intricate and multi-colored *E. guttata* mantle.


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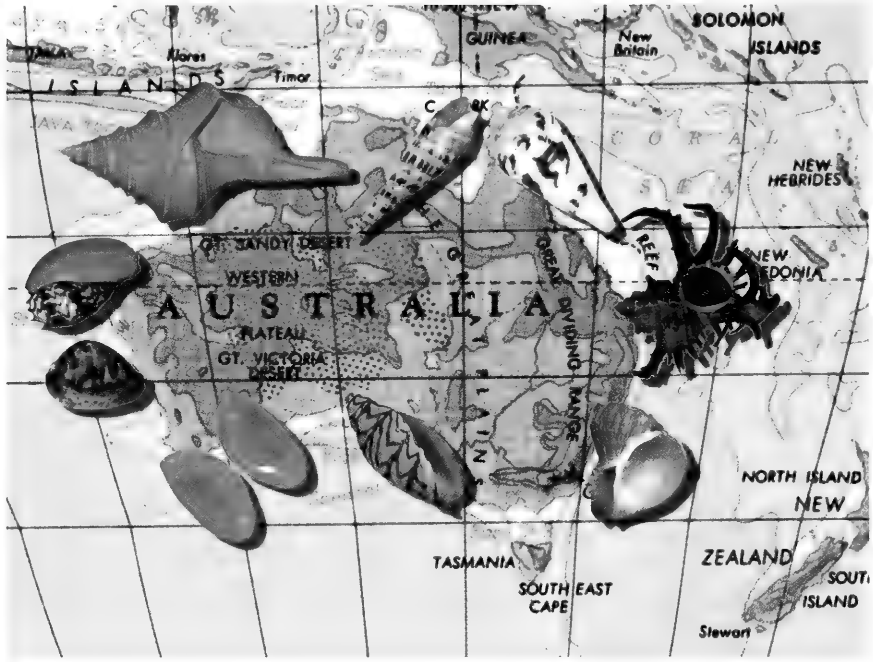
# Australian Marine Mollusks

by Zvi Orlin




I have been interested in the marine mollusks of Australia for many years. The continent borders both the Indian Ocean and the Pacific Ocean, and its climatic regions are certainly a bonus for shell collectors: tropical through temperate with islands reaching from sub-Antarctic waters to the Antarctic continent. These varied conditions enable species from innumerable biotic enclaves to enrich the molluscan fauna. I have for many years believed that it is one of the richest countries in molluscan species, so I set up a project to try to prove my theory. Normally it is no easy task to determine the number of species prevalent in a country, unless extensive research enables the publication of a checklist of its species, as was done recently in New Zealand. This is a mammoth task, especially in a country like Australia, where malacologists are kept quite busy studying the many taxa of the area. Funding a species count is expensive and of a lower priority than the many projects deemed of more immediate importance.

I decided to use three books for my project: "Bivalves of Australia," "Australian Marine Shells," and "The Southern Synthesis," each of these consisting of two volumes. Thanks to Kevin Lamprell *et al.* "Bivalves of Australia" has a detailed description of most of the known species of bivalves, except some microshells. It supplied me with excellent information. Barry Wilson's "Australian Marine Shells" provides extensive coverage, but only on the gastropod Prosobranchia, not including Opisthobranchia. In order to manage counting the number of species in the latter and other classes of mollusks I used the two volumes of "The Southern Synthesis." This outstanding work is a credit to the Australian Biological Resources Study in Canberra and answered most of my questions. Without this work I would never have been able to conclude my study. I should mention that the Pulmonata, a subclass of Gastropoda was not included in my study, as it deals predominantly with terrestrial and freshwater mollusks.

This is the tally of species I found in the above books:

| | | |
|---|---|---|
| Aplacophora | 33 species | |
| Polyplacophora | 180 " | |
| Bivalvia | 1,393 " | |
| Scaphopoda | 107 " | |
| Cephalopoda | 222 " | |
| Gastropoda | 4,505 " | (including 1,000 Opisthobranchia mentioned in "The Southern Synthesis") |
| Total | 6,440 species. | |

Some of the families recorded by me in this list, particularly microshells, were only classified to the genus level and I assumed that at least two species on average were found in each genus. I regard this as a gross underestimate, but necessary to complete the count. As the books used for this study were published at least 9 years ago (from 1994-1998), I am sure many additional species have been found. This means my figures are preliminary and understated. Malacological experts studying Australian Mollusca estimate there are over 10,000 species in the surrounding waters, and some put that figure at 15,000 or even up to 30,000.

The only country I know of that comes close to this figure is Japan, where the recent "Marine Mollusks in Japan" listed 5,106 species. According to my knowledge, this is the highest detailed figure listed for one country. At the present time, published accounts of numbers for the Philippines are lower than either of these numbers.

No doubt the research work by malacologists studying Australian mollusks will find many additional species in Australian waters, especially microshells and supplement the figure I have quoted by possibly many thousands. I look forward to eventually seeing at least a *Checklist of Australian Mollusks* in the near future, which will prove without doubt that it is the most prolific location of mollusk species in the world.

**References:**

**Beesley, P.L., Ross, G.J.B. & Wells, A. (eds).** 1998. *Mollusca: The Southern Synthesis. Fauna of Australia.* Vol. 5, CSIRO Publishing, Melbourne, Part A xvi 563 pp. Part B, viii 565-1234 pp.

**Lamprell, K. and Whitehead, T.** 1992. *Bivalves of Australia,* Vol. 1, Crawford House Press, Bathhurst NSW Australia, 182 pp.

**Lamprell, K. and Healy, J.** 1998. *Bivalves of Australia,* Vol. 2, Backhuys Publishers, Leyden, The Netherlands, 288 pp.

**Wilson, B.** 1993 & 1994. *Australian Marine Shells, Prosobranch Gastropods,* Vol. 1, 408 pp. & Vol. 2, 370 pp. Odyssey Publishing, Kallaroo, WA Australia.

**Okutani, T. (editor).** 2000. *Marine Mollusks in Japan*, Tokai University Press, Tokyo, Japan, 1,173pp.

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# Exotic Molluscan Introductions to the San Francisco Bay Area

**By Tom Grace**

The introduction and successful adaptation of exotic molluscan species has occurred with increased frequency in the San Francisco Bay Area. The term "exotic" can be defined as a species that was not present in the north Pacific region before the entry of Europeans in the 16th century, or present in distant parts of that region and later introduced to the Bay and Delta ecosystems by some form of external (normally human) manipulation or action. In the context of this article, the terms "exotic," "alien," "non-indigenous," "non-native," or "introduced" species can be used interchangeably.

Aquatic and terrestrial species can be transported between bioregions by various anthropogenic means, including:

- Intentional transport and introduction for aquaculture or other food source species.
- Accidental introduction of species "hitchhiking" with aquaculture species introductions.
- Accidental introduction of eggs, larva and mature specimens via commercial shipping by either attachment to ship fouling, in discharged water ballast, or in transported vegetation.
- Intentional release of species from private collectors (e.g., aquarium trade introductions).
- By a combination of events from all of the above or other means.

Per comments gleaned from several different research papers, the San Francisco Bay Area and Delta region may be one of the most invaded aquatic ecosystems in the world. As an international crossroad for people and for commerce, as well as providing a wide array of environmental niches, the entire region has demonstrated repeatedly that it is a favored area for many species to set down roots and grow (not all of which are necessarily molluscan!).

Many of the exotic molluscan species that have been introduced may have relatively minor influences on the local environment. Others, however, either have the potential or have already demonstrated significant negative impact. At the very least, the introduction of exotic species provides a source of competition to native species for regional resources. At the worst, exotics can out-compete and eventually supersede native species as a dominant regional species.

In the early part of the 20th century the San Francisco Bay Area and Delta region was not well cared for and environmental conditions were allowed to degrade significantly. Since the late 1960s and early 1970s the people living in the San Francisco Bay Area and Delta region have participated in many activities to help restore the region to the better conditions seen during earlier times. The initial anthropomorphic degradation and subsequent rehabilitation of the region may have also been key factors towards giving exotic species a chance to proliferate in recent times. The remnants of certain native species populations may not have been as viable in re-establishing themselves.

The attached Table and photographs provide examples of many of the exotic molluscan introductions that have now established populations in the San Francisco Bay Area and adjacent Delta region. Over the years I have had the opportunity to become familiar with many of these species during periods of beach exploration, especially in the eastern San Pablo Bay section of the greater San Francisco Estuary system.

Thoughts concerning the potential impact caused throughout the San Francisco Bay Area, Estuary, and Delta systems by the invasion of exotic molluscs can be summarized as follows:

- The San Francisco Bay Area and Delta region is a highly invaded ecosystem.
- A vast amount of energy now passes through and is used by nonindigenous species found in both aquatic and terrestrial systems in the region. In the 1990s it was shown that introduced species had come to dominate many of the region's food web systems.
- Introduced species may be causing profound changes to some of the regional habitats.
- While no exotic introduction into the Bay and Delta region has unambiguously caused an extinction of a native species, introductions have led to the complete habitat or regional extirpation of several species.
- Although the economic impacts (pro and con) of introduced species into the region are substantial, they are still poorly understood and /or quantified.

**References:**


**Abbott, R.T.** 1974. "American Seashells," Second Edition, Van Nostrand Reinhold, New York, 663 pp.

**Cohen, A. N. & J. T. Carlton.** 1995. Nonindigenous aquatic species in a United States estuary: A case study of the biological invasions of the San Francisco Bay and Delta, United States Fish and Wildlife Service, Washington D.C. and The National Sea Grant College Program (NOAA Grant No. NA36RG0467), 170 pp.

**Cohen, A. N. & J. T. Carlton.** 1998. Accelerating invasion rate in a highly invaded estuary, *Science* 279: 555-57.

**Gosliner, G.** 2006. Opistobranch – *Philine auriformis, People, Places and Things, Research at the California Academy of Sciences*, 1 pp.

**NIMPIS** (2002). *Potamocorbula amurensis* (*Corbula amurensis*) species summary, National Introduced Marine Pest Information System (NIMPIS), Eds: Hewitt C.L., Martin R.B., Sliwa C., McEnnulty, F.R., Murphy, N.E., Jones T. & Cooper, S. Web publication: http://crimp.marine.csiro.au/nimpis.

**Turgeon D.D., J. F. Quinn, & thirteen co-authors.** 1998. Common and scientific names of aquatic invertebrates from the United States and Canada; mollusks. Second Edition, American Fisheries Society, Special Publication 26, Bethesda, Maryland.

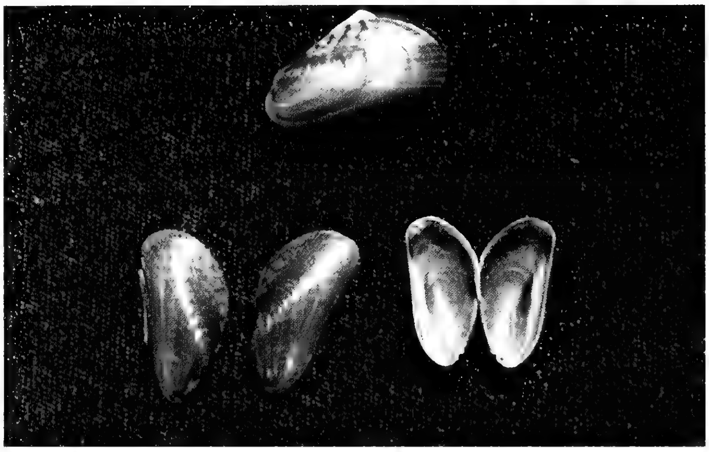
| Species | Introduced from | When First Observed | Hypothetical Cause of Introduction / Field notes |
|---|---|---|---|
| **Gastropod/ Opisthobranchia:** | | | |
| *Boonea bisuturalis* (Say, 1822) two-groove odostome | West Atlantic Coast USA | 1890s | Introduced with shipments of oyster spat from the east coast for local aquaculture. Appears to be a benign species. |
| *Busycotypus canaliculatus* (L., 1758) channeled whelk* | West Atlantic Coast USA | 1953 | Probably introduced with shipments of oyster spat from the east coast for local aquaculture. Feeds on bivalves. Now largest gastropod species in the Bay Area. |
| *Catriona rickettsi* Behrens, 1984 | unknown | 1974 | Ship ballast water or eggs on ship fouling. |
| *Bellamya (Cipangopaludina) chinensis* (Gray, 1817) Chinese mysterysnail* | China freshwater | 1890's | Introduced by Chinese as a food item. It can be an aquatic vegetation pest. A possible trematode vector |
| *Crepidula convexa* Say, 1822 convex slippersnail* | West Atlantic Coast USA | 1890's | Introduced with shipments of oyster spat from the east coast for local aquaculture. Considered a benign species. |
| *Crepidula plana* Say, 1822 eastern white slippersnail* | West Atlantic Coast USA | 1901 | Introduced with shipments of oyster spat from the east coast for local aquaculture. Considered a benign species. |
| *Cuthona perca* (Marcus, 1958) Lake Merritt cuthona | Brazil, Hawaii, or New Zealand | 1958 | Ship ballast or eggs on ship fouling. Apparently benign. Feeds on an introduced species of sea anemone. |
| *Eubranchus misakiensis* Baba, 1960 Misaki balloon aeolis | Japan | 1962 | Ship ballast, or eggs on ship fouling, or on Japanese oysters brought over for aquaculture. |
| *Cornu aspersum* (Müller, 1774) brown gardensnail* | Europe terrestrial | 1850's | European import as a food item (early California gourmet cuisine!). An agricultural and ornamental plant pest. |
| *Littorina saxatilis* (Olivi, 1792) rough periwinkle | West Atlantic Coast USA | 1993 | Introduced from east coast in seaweed (*Fucus*) used to pack bait worms sent from Maine. Limited area. Considered a benign species. |
| *Melanoides tuberculatus* (Müller, 1774) red-rim melania | Africa-Asia Freshwater | 1972 | Aquarium trade introduction. |
| *Myosotella myosotis* (Draparnaud, 1801) Salt marsh snail | East & West Atlantic | 1871 | In ship ballast or with oyster spat. May compete with native species for resources. Considered benign. |
| *Ilyanassa obsoleta* (Say, 1822) eastern mudsnail* | West Atlantic Coast USA | 1907 | Introduced with shipments of oyster spat from the east coast for local aquaculture. Now considered the dominant mud flat species in the Bay Area and probably in competition with native species for available resources. |
| *Okenia plana* Baba, 1960 flat okenia | Japan | 1960 | In ship ballast water or as eggs in ship fouling, or possibly on Japanese oyster spat used in aquaculture. |
| *Oxychilus draparnaudi* (Beck, 1837 dark-bodied glass-snail* | Europe | unknown | Most likely introduced with plant nursery stock. A small, easily concealed, terrestrial species. Small, but carnivorous. Several reports discuss its ability to eat juveniles of other terrestrial snail species. |
| *Philine auriformis* Suter, 1909 tortellini snail* | New Zealand/ Australia | 1993 | In ship ballast water. A tenacious species that can be present in large numbers, it is a voracious feeder of small bivalve species. Competes with native species for resources. |
| *Potamopyrgus antipodarum* (J. E. Gray, 1843) New Zealand mudsnail | New Zealand Fresh water | 1990's | Initial introduction most likely with game fish. Subsequent transport and distribution with contaminated fishing equipment (e.g., boats, nets, etc.). Due to capability for forming large colonies (to 800,000/ $m^2$) it can out compete native species for resources. No known natural predator. Found now in the Napa River and Putah Creek. |
| *Radix auricularia* (Linnaeus, 1758) big-eared radix* | Europe Fresh water | unknown | A northern European import spread throughout America, possibly with game fish introductions. Locally common in high densities which may compete with native species for resources, otherwise considered as benign. |
| *Sakuraeolis enosimensis* Baba, 1930 white-tentacle Japanese aeolis | Japan | 1972 | In ship ballast water or eggs on ship fouling. |
| *Tenellia adspersa* (Nordmann, 1845) miniature aeolis | Mediterranean | 1953 | In ship ballast water or as eggs on ship fouling. |
| *Urosalpinx cinerea* (Say, 1822) Atlantic oyster drill* | West Atlantic Coast USA | 1890's | Introduced with shipments of oyster spat from the east coast for local aquaculture. Predatory snail that damages native oyster and mussel populations. |

| Species | Introduced from | When First Observed | Hypothetical Cause of Introduction / Field notes |
|---|---|---|---|
| **Bivalvia:** | | | |
| *Corbicula fluminea* (Müller, 1774) Asian clam* | China/ Korea/ Japan | 1924 | Introduced to the west coast as a food source by Asian emigrants. The most common freshwater bivalve in state. Considered a major pest and competitor for native species. |
| *Crassostrea gigas* (Thunberg, 1793) Pacific oyster* | Japan | 1875 | Introduced as an aquacultured species to the Bay Area. Considered a benign species. |
| *Crassostrea virginica* (Gmelin, 1791) Eastern oyster* | West Atlantic Coast USA | 1870's | Introduced as an aquacultured species to the Bay Area. Considered a benign species. |
| *Gemma gemma* (Totten, 1834) amethyst gemclam* | West Atlantic Coast USA | 1893 | Introduced with eastern oyster spat for aquaculture. Considered a benign species and major food source for other animals. |
| *Geukensia demissa* (Dillwyn, 1817) ribbed mussel* | West Atlantic Coast USA | 1894 | Introduced with eastern oyster spat. Found in large numbers especially in some salt marsh areas. A hazard to local endangered Clapper Rail (bird). Seems they get their toes or bills stuck in the mussel at low tide and either get damaged or drown on the incoming tide. |
| *Macoma petalum* (Valenciennes, 1821) baltic macoma* | NW Atlantic Coast USA | mid-1850s | This species has been often confused with *M. balthica* (Linnaeus, 1758). Various scenarios proposed for introduction. An apparently benign species that is a food source for other animals. |
| *Musculista senhousia* (Benson, 1842) green mussel* | Japan/ China | 1946 | May impact other species due to high-density mat-like population centers. Introduced with Japanese oyster spat used for aquaculture. |
| *Mya arenaria* Linnaeus, 1758 soft-shell* | Alaska/ NW Atlantic | 1870's | Most likely with introduction of eastern oyster spat or introduced intentionally as a food source. A commercially beneficial species. Found in declining numbers recently. |
| *Mytilus galloprovincialis* Lamarck, 1819 Mediterranean mussel* | Europe | early 1900's | Ship ballast or fouling. Species intermixes with local *Mytilus* species (*M. edulis* complex). Not seen as an objectionable species. |
| *Petricolaria pholadiformis* (Lam., 1818) false anglewing* | NW Atlantic Coast | 1927 | Most likely in ship ballast water. Not seen as an objectionable species. Provides a food source for other animals. |
| *Potamocorbula amurensis* (Schrenck, 1861) brackish-water corbula* | China/Russia Estuarine | 1986 | From ship ballast water. Seen as a highly competitive species that is capable of outcompeting local native species for resources. Found with high-density populations. |
| *Teredo navalis* Linnaeus, 1758 naval shipworm | Global | 1913 | Source unknown. Shell and damage unnoticed in Bay Area prior to 1913. Animal responsible for millions of dollars of damage to wooden structures since introduced. |
| *Theora lubrica* Gould, 1861 Asian semele | Australia | 1952 | From ship ballast water. Seen as a highly competitive species that is capable of outcompeting native species for resources. |
| *Venerupis philippinarum* (A. Adams and Reeve, 1850) Japanese little-neck* | Japan | 1946 | Transplanted with oyster spat and as a food source. This has become a commercial species in the Bay Area. There may be resource competition between it and the native *Protothaca* species. |

* Personally collected in the San Francisco Bay Area by the author and kept as voucher specimens.

**Low tide, flats exposed near mouth of Pinole Creek, San Pablo Bay. Looking northward into the Napa/Sonoma Valley region.**

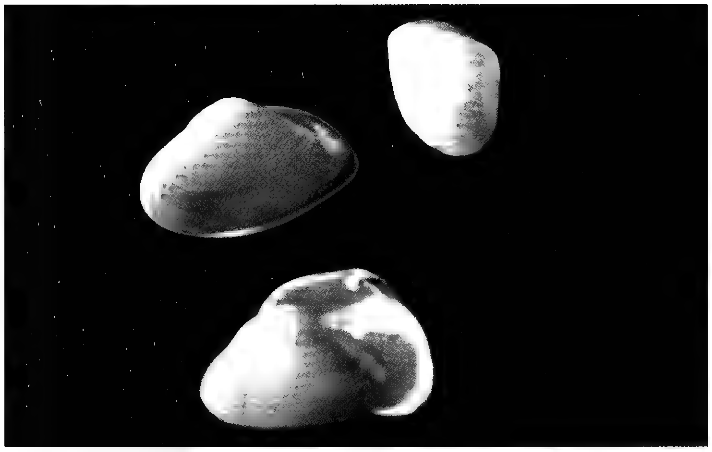
Color varieties of *Macoma petulum* (Valenciennes, 1821), an apparently benign species that serves as a food source for a number of different seashore animals.



*Musculista senhousia* (Benson, 1842), introduced with commercial oysters, has the potential to cause damage and to impact native species. It forms dense mats of shells.

*Venerupis philippinarum* (A. Adams and Reeve, 1850), the Japanese little-neck, was introduced in the mid 1940s and has since become a commercial shellfish. Older references place this species in *Tapes*.

Drift material collected from the mouth of Pinole Creek, San Pablo Bay, California. Clockwise from upper left: *Macoma petulum* (Valenciennes, 1821), *Macoma inquinata* (Deshayes, 1854) (native), *Stagnicola elodes* (Say, 1821) (native), *Cornu aspersum* (Müller, 1774), *Planorbella occidentalis* (J.G. Cooper, 1870) (native), *Geukensia demissa* (Dillwyn, 1817), *Philine auriformis* Suter, 1909, *Musculista senhousia* (Benson, 1842), and *Mya arenaria* Linnaeus, 1758.



*Potamocorbula amurensis* (Schrenck, 1861), the brackish-water corbula, is another species that forms dense mats and has the potential to outcompete native species.

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# *Cypraeovula alfrendensis* – A Blue Form of *Cypraeovula edentula*

**By E.L. Heiman**

The uncommon to rare *Luponia edentula alfredensis* Schilder & Schilder, 1929, was first described as a subspecies. Later in Schilder & Schilder (1938), it was mentioned as a form of *Cypraeovula edentula* (Gray, 1825), and the authors explained, "We now think that *alfredensis*…is an ecological variety only, characterized by a more solid shell with the right margin thickly swollen and the teeth less numerous (22.29 instead of 23.33)."

In Schilder & Schilder (1969) the authors treated this taxon as a species:

> Forty years ago…we established *Luponia alfredensis* as an ecological subspecies of *L. edentula* Gray, differing by the more solid shell with the right margin more thickened; the shells were slightly larger than those of *L. edentula* from the same locality (Port Alfred, South Africa), the dorsum was more worn that [sic] in *L. edentula* so that it looked pale brown without any traces of spots. Recently Mrs. Hazel Jefferies of Kei Mouth, South Africa presented us forty specimens of *Luponia*, which she had collected personally on the ten miles-long beach between Kei Mouth and Haga Haga: all shells are surprisingly well preserved so that they show accessory differences in color and markings. The slightly smaller (mostly 24-26mm) and less solid *L. edentula* is dorsally pale brownish orange with the rusty brown specks rather large, irregularly confluent, but never showing the tendency to form a central blotch; while the larger (mostly 26-29mm) and very solid *L. alfredensis* is dorsally grey, with the fulvous specks tiny and scattered, and with a large, well defined central blotch, which is often interrupted by paler lacunae, but rarely absent at all. There are no intermediates between the twenty shells of each species so that Mrs. Jefferies could separate them without any mistake…The combination of characters in size, solidity, color, and markings prove *L. alfredensis* to be a distinct species, as it is sympatric with *L. edentula* in many localities in South Africa.

In Schilder & Schilder (1971) *Cypraeovula alfredensis* is listed as a valid species. For conchologists a species is typically a mollusk population that can be separated from other species by one or several well recognizable diagnostic characters showing no intermediates even in extreme specimens. Most of the subsequent authors adopted the specific rank of *C. alfredensis* because they kept imagining its main diagnostic shell characters as clear and well defined. Besides, not many shells of both *C. edentula* and *C. alfredensis* were then available for comparison, and no new diagnostic shell characters were added to the original description of *C. alfredensis* as a species.

Raybaudi (1987) mentioned the shell length range of *C. alfredensis* as 18-36mm. In Liltved (1989), in my opinion the most competent work on endemic cowries of South Africa, *C. alfredensis* is treated as a valid species in which "the dorsal ground colour is slate-gray, with a superimposed dark medio-dorsal blotch, whereas *C. edentula* is yellow or orange with fine superficial spotting" and the shell length range is 20-33mm. Hence the shell length range of *C. edentula* and *C. alfredensis* overlaps and cannot be used as a diagnostic character of a specific level.

When studying intraspecific variation in *C. edentula* and *C. alfredensis*, I found that the other diagnostic characters of *C. alfredensis*, the more solid shell, more thickened right margin, grey dorsum with fulvous dorsal specks, and large brown dorsal blotch (Figs. 1-2 & 5-6), may also be problematic for the specific level of *C. alfredensis*. Solid shells with a thickened right margin and fulvous dorsal specks can be seen in *C. edentula* as well (Figs. 3-4 & 7-8), hence the only difference between the compared taxa consists of the dorsal color and presence or absence of the dorsal blotch. The Schilders noted, however, that the dorsal blotch in *C. alfredensis* may be absent. Thus, strictly speaking, the only diagnostic character is the color of the dorsum.

Dorsal color alone is rarely used as the main diagnostic character in cowries because it may fade with time, especially in beached specimens, and depends sometimes on environmental conditions. The fact that this seems to be the only difference between *C. alfredensis* and *C. edentula* as species may lead to confusion. It was interesting to learn how conchologists confront this situation.

In order to check what the conchological practice of today is, I made an attempt to get information about large samples of shells of the two taxa discussed, as shown in Table 1 where the data are based on the literature, the author's collection, and the Internet. Surprisingly, only 56% of shells diagnosed as *C. alfredensis* in Raybaudi (1987:17) have the dorsal blotch; in other sources this character is present in 65% of shells. Of shells diagnosed as *C. edentula*, 24-32% have the dorsal blotch and about 6% have gray to gray-blue dorsal color, the characteristic of *C. alfredensis*. It should be remembered that the percentage of shells with the dorsal color or blotch (or other diagnostic character) is not given in the table for single *C. alfredensis* populations; it is given for single shells or small samples of shells from different localities, which are diagnosed as *C. alfredensis* in the sources used.

**Table 1**
**Number of shells with certain diagnostic characters given in different sources**

| **Taxon** | **Number of Shells** | **Shell Characters** gray or gray-blue dorsal color | orange or light brown dorsal color | brown dorsal blotch |
|---|---|---|---|---|
| *C. edentula* in Raybaudi (1986:16) | 62 | 0 | 62 | 20** (32%) |
| *C. edentula* (45 author's collection) | 109 | 6 | 103 (95%) | 26 (24%)** |
| *C. alfredensis* in Raybaudi (1987:17) | 37* | 0 | 37 | 18 (56%) |
| *C. alfredensis* in Liltved (1989) | 10 | 10 | 0 | 10 |
| *C. alfredensis* (various sources) | 34 | 16 | 18 (53%) | 22 (65%) |

Notes:
*) Shells of *C. alfredensis* pictured in Raybaudi (1987) have light brown to beige tinge but this can be explained by the effects of lighting and color printing.
**) The dorsal blotch is paler and less defined in *C. edentula.*

So the literature and conchological practice of today show that conchologists often confuse *C. edentula* and *C. alfredensis*, perhaps because there are shells with intermediate characters such as color tinges, especially in beached shells with a pale though distinct dorsal blotch and so forth. Elevating *C. alfredensis* at the specific level in Schilder & Schilder (1969) was based on certain assumptions, which now turn out to be questionable, leaving an impression that *C. alfredensis* is not separable conchologically. In my opinion there is no evidence that it is a valid species.

*C. alfredensis* cannot be treated as a subspecies of *C. edentula* because a subspecies, by definition, includes geographic separation. According to Raybaudi (1987) the two taxa discussed above are mostly found in the same area but the ratio between collected shells is one of a single *C. alfredensis* to 40-50 *C. edentula*. Such a proportion is more suitable for a variety or form, and it is thus better to treat *C. edentula*-like shells with a blue or gray-blue dorsum as a variety or form.

A name for this form is not important because a form name is not recognized by the zoological nomenclature, but if conchologists want to name this form it is preferable to use a descriptive name such as 'blue,' 'blue-gray,' etc. The form name 'alfredensis' may be confusing due to its subspecific or specific "past."

Such are the facts. One might say that *C. alfredensis* is a sibling species, in other words a species that co-exists with and is reproductively isolated from *C. edentula* and not separable conchologically from the latter, but convincing scientific evidence must be presented in order to prove that idea.

**Literature**
**Burgess, C. M.** 1985. Burgess' Cowries of the World, Cape Town, Gordon Verhoef, Seacomber Publications, 289 pp.
**Heiman, E.L.** 2004. Diagnosing cowry species, published privately, 160 pp.
**Liltved, W. R.** 1985. Development and variability in the Cape *Cypraea* complex, HSN 33(1):9.
**Liltved, W. R.** 1989. Cowries and their relatives of southern Africa. A study of the southern African Cypraeacean and Velutinacean gastropod fauna, Seacomber Publications, 208 pp.
**Lorenz Jr. F. & Hubert, A.** 1993. A Guide to worldwide Cowries, Christa Hemmen Verlag, Wiesbaden, Germany, 571 pp.
**Raybaudi, L.** 1986. *Cypreaovula (Luponia) edentula* Gray, 1825, The Connoisseur of Seashells, 12:14-18.
**Raybaudi, L.** 1987. *Cypraeovula (Luponia) alfredensis* Schilder–Schilder, 1929, The Connoisseur of Seashells, 13:16-19.
**Schilder F.A. & Schilder, M.** 1938. Prodrome of a monograph on living Cypraeidae, Proceedings of the Malacological Society of London 23:119-231.
**Schilder, F.A. & Schilder, M.** 1969. The cowrie *Luponia alfredensis* is of specific rank, HSN 7:7.
**Schilder M. & Schilder F.A.** 1971. A catalogue of living and fossil cowries, Institut Royal des sciences naturelles de Belgique. 246 pp.

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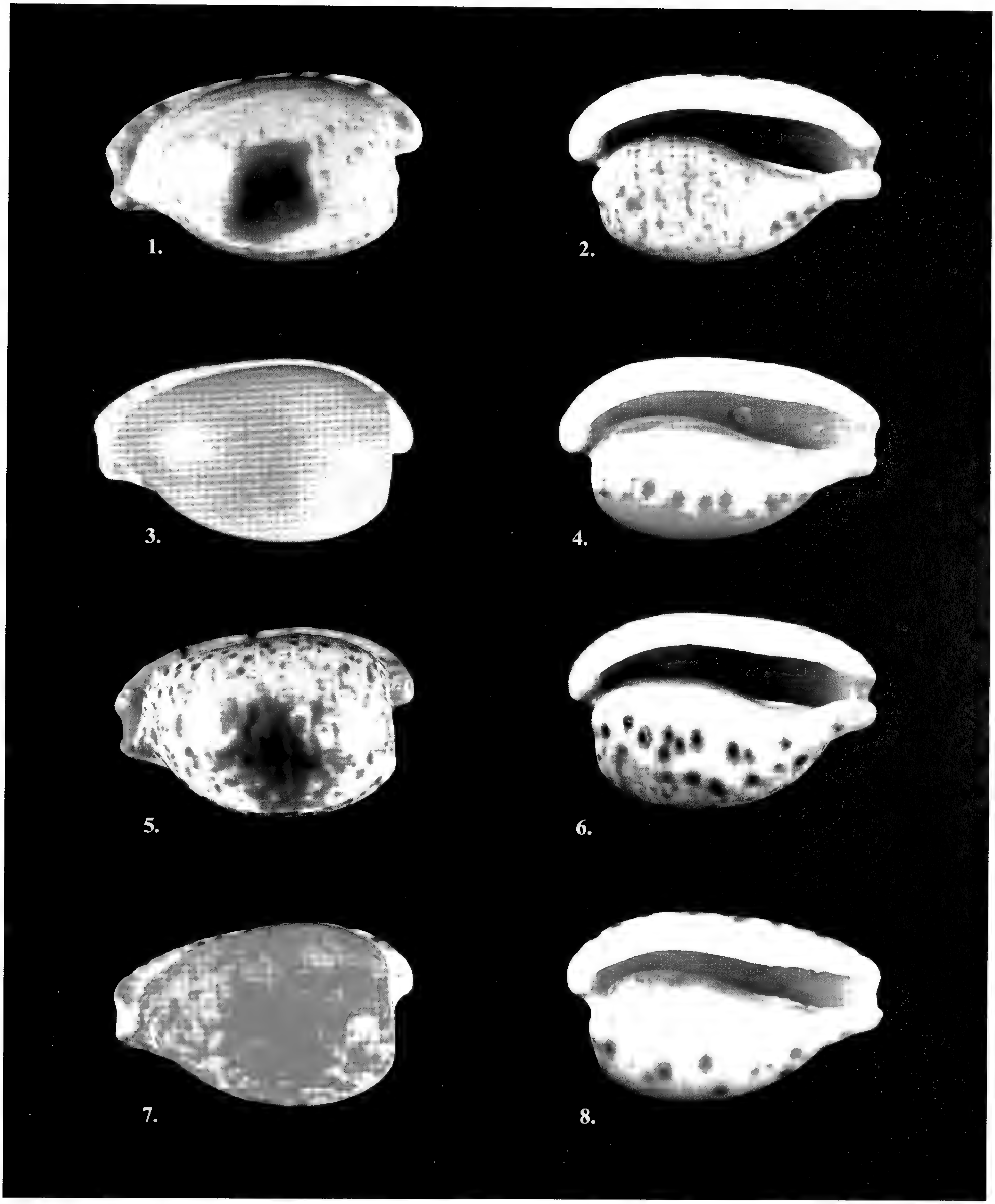



1-2. *Cypraeovula alfredensis*, 23mm Port Elizabeth, S. Africa.
3-4. *C. edentula*, 28.7mm Jeffreys Bay, S. Africa. The shell shape is almost identical to that of Fig. 1-2 but color is different.
5-6. *C. alfredensis*, 24mm Port Elizabeth, S. Africa.
7-8. *C. edentula*, 25 mm Jeffreys Bay, S. Africa.

# SHELLS WORK THEIR MAGIC AT PORTLAND COA 2007

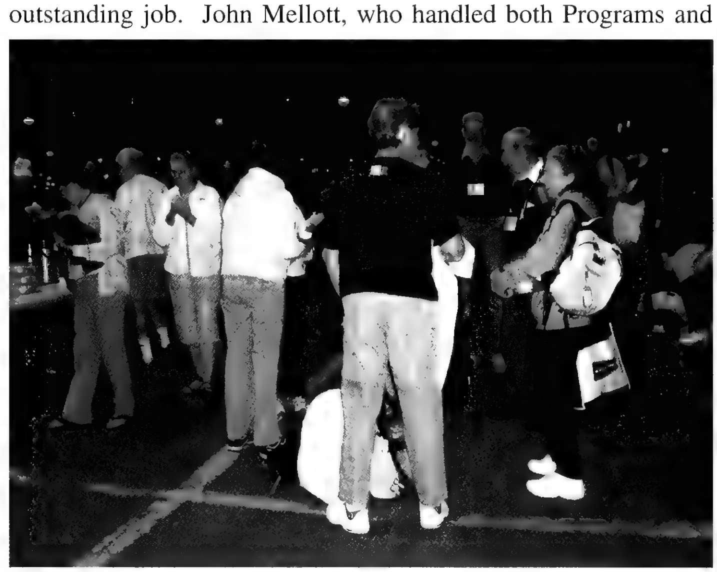
**By**

**Marsha Darcy (photographs by Fabio Moretzsohn)**

There was no need for Harry Potter's wizardry, or even a glass of champagne. Shells, shell people, and a delightful quality to the air itself brought about a wonderful feeling of intoxication all on their own during the 2007 COA Convention in Portland, Oregon. This 36th Annual COA Convention, titled "Chardonnay and Shells," took place at the Monarch Hotel and Conference Center. It was a smaller, more intimate hotel than many we have stayed at in the past. The level of service provided by the staff was outstanding, as was the quality and variety of food served in "Sam's" restaurant. Portions were very large, service was friendly and quick, and many people ate there often, despite the close proximity of other excellent restaurants. Outside the hotel, two favorites with club members were "Gustav's Pub and Grill" and "Claim Jumper" (mistakenly called "Clam Jumpers" by Wayne Groome, and the name stuck). "Clam Jumpers" was also renowned for large portions, and Sharon Groome got the largest "piece" of chocolate cake I'm sure any of you have ever seen! The Monarch Hotel also provided shuttle service to and from the airport and nearby shopping malls.

Joyce Matthys, Convention Chairperson, was proven a master of organizational skills, and she and her committee did an outstanding job. John Mellott, who handled both Programs and


**Our hosts, John Mellott and Joyce Matthys, were two of the many Oregonians who made this convention such a success.**



**COA members mill in the parking lot while waiting before sunrise for the bus to the coast.**

**Of course, no one complained once they saw what awaited them at the coast for their early morning collecting excursion.**

Field Trips, was outstanding as well. The days and nights were tightly packed with field trips, silent auctions, awarding of door prizes, sales of raffle tickets, the annual meeting, presentations, the oral auction, and, of course, the welcome party and banquet. All of this led up to the bourse, which concluded the convention. It was announced that approximately 234 people were in attendance at the Convention.

**Field trips:** (held on the two days prior to the official Convention opening) were:

Fossil field trip
Mt. St. Helens field trip
Columbia River Gorge, Mt. Hood field trip
Shell Collecting field trip
Winery and Wine Tasting field trip

The only glitch I heard of was when the bus driver for the shell-collecting trip overslept, and another driver had to be rounded up. The trip was due to leave the hotel at 4 A.M. (!), and people were left waiting in the parking lot for 2 1/2 hours. My own personal "glitch" was making the mistake of booking my airline tickets with Northwest, thereby arriving in Portland twelve and a half hours late!

**Programs:** The programs this year were especially good, and included:

Gene Everson spoke on "Shelling in Lembah Strait, Sulawesi, Molucca Sea, Indonesia."

José Leal presented an unusual species of Cardiidae discovered in the waters off Florida.

Gene Everson

David Stick discussed the Oregon native oyster, *Ostrea conchaphila* Carpenter, 1857, and present efforts to help this species that was over-fished by man in the 1800s and out-competed by introduced oysters.

Fabio Moretzsohn discussed the possible uses of odontophores in Cypraeidae identification. These small cartilage-like structures are enclosed in the buccal pouch with the radula and have largely been ignored as a defining character trait. Later during the convention he presented a talk on "Texas Seashells." Hopefully an expansion of the book, "Shells and Shores of Texas," by Jean Andrews will be published in time for next year's convention in San Antonio, Texas.

Bob O'Neill presented a wonderful 30-minute video on "Shelling in French Polynesia." It looked like a dream of a shelling trip!

José Coltro showed us 20 years of new species found in Brazilian waters.

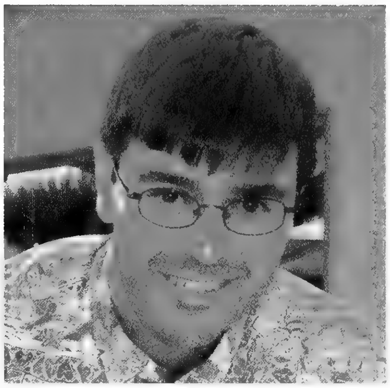
Ray Wilson showed us the variety of fossils found on Oregon coasts.

Felix Lorenz spoke on cowries (of course), presenting some of the identification issues he has faced and following up with a cowrie ID workshop.

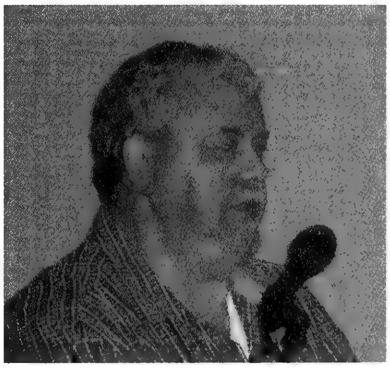
Bret Raines gave a presentation on endemic shells of the Easter Island, titled "Moai to Microshells."

Alice Monroe spoke on the intricacies of "Molluscan Predator-Prey Relationships." She included lots of images of shell crunching crabs and

José Leal



Fabio Moretzsohn



Ray Wilson

José Coltro

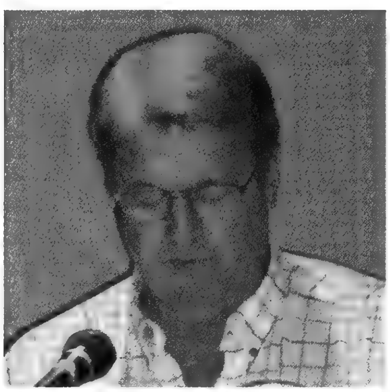
**Alan Kohn**

their specialized pinchers, as well as correcting the common misconception that muricids drill into their victims. They do not.

Alan Kohn discussed "Taxonomy and Relationships of *Conus* Species: Using Shells, Teeth, and Genes as Characters." He was able to demonstrate that his earlier morphological work with cones has stood up rather well under more recent genetic efforts.

Michael Morrissey discussed new high pressure processing methods for oysters.

Bill Dewey spoke on "Shellfish Culture in the Pacific Northwest – A Dirty Job." His company was featured in a recent episode of the Discovery Channel's "Dirty Jobs" with host Mike Howe. Mike helped dig up the geoduck (pronounced "gooey-duck"), *Panopea generosa* (Gould, 1850), from Pacific mudflats.



**Hank Cheney**

Mark Camara presented some of the genetic studies being done with Oregon native oyster, *Ostrea conchaphila* Carpenter, 1857, and their importance to ongoing restoration efforts.

Christopher Langdon & Ford Evans discussed the "Shell Morphology and Color of the Pacific Oyster, *Crassostrea gigas* (Thunberg, 1793)."

Allen K. Smith introduced us to the "Freshwater Mussels of the Pacific Northwest."

Peggy Williams, known to most members of COA, talked about "Living Florida/Caribbean Miniatures."

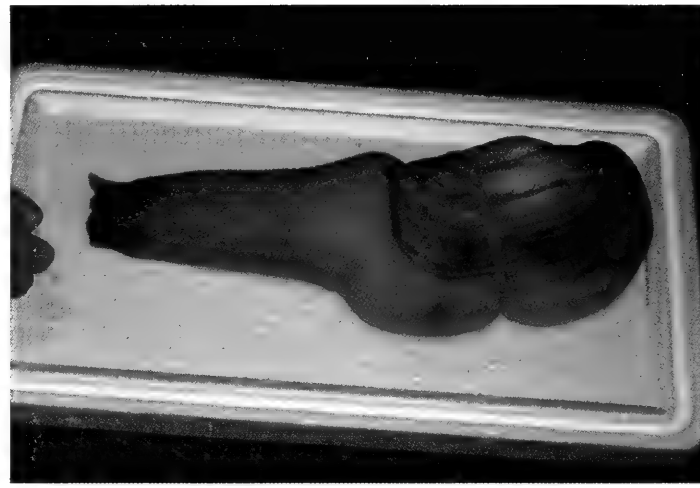
Ray Wilson had a second talk titled "Shells in the Prehistoric Economy of Indigenous People of Western North America." He presented examples of shells used as food, jewelry, trade, money, and tools.

**Baldomero Olivera**

Bill Belli's topic was "Shells, Slaves, and Voodoo." This was a fascinating talk on West Africa, where he lived for two years before returning to the US for family reasons.

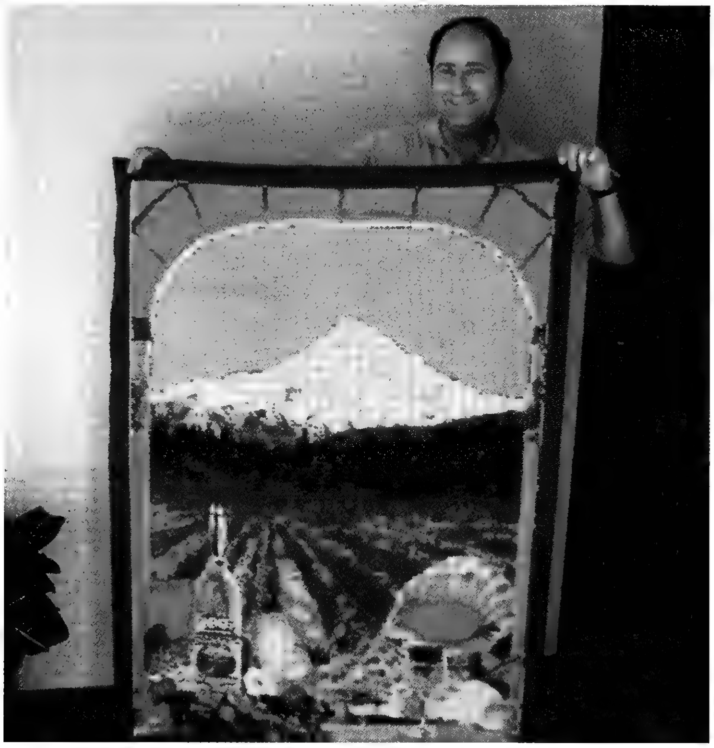
One presentation that held a lot of interest for many members was by COA President Hank Cheney, titled "Who gets all of this, when you go?" There are a number of options with pluses and minuses, but apparently there is no truly satisfying answer to this question.

Certainly for many people one of the main highlights was a program called "Learning Neuropharmacology from Cone Shells," presented by Baldomero Olivera, M.D., Ph.D. Dr. Olivera was the convention's special guest speaker. A noted molecular biologist, he was named "Harvard Foundation 2007 Scientist of the Year." He is a long-time friend of Donald Dan's (they were high school classmates in the Philippines), and it was through Donald Dan's efforts that he was invited to this year's convention. Dr. Olivera is widely known for his groundbreaking research with the neurotoxins produced by venomous cone snails and is a leading figure in the emerging field of neuropharmacology. He pointed out that 70% of



**A preserved geoduck (*Panopea generosa* (Gould, 1850)), the largest burrowing clam in the world. They live for more than 100 years (the oldest recorded age is 160 years according to Wikipedia at: http://en.wikipedia.org/wiki/Geoduck) and are commercially harvested along the Northwest Coast of North America. They live deeply buried in mud and can obtain a shell size of 9 inches and a "live-weight" in excess of 3 pounds. Bill Dewey's presentation included hilarious video of Mike Howe waist-deep in mud trying to harvest geoducks.**

**The welcome party was a full buffet menu and lots of fun.**



Above: A tapestry of the COA 2007 theme created by Fatima Amorim and donated to the oral auction. The tapestry is shown by Manuel Amorim.

**Below: A popular oral auction prize: Astoria Formation fossils (*Musashia indurata*) 15x9.5 inches from Ray Wilson.**

untreated human bites from the geography cone are fatal, a rate comparable to that of cobras and puffer fish. His work has lead to the development of a drug, "Prialt," now with FDA approval, which in some instances is more effective against chronic pain than morphine. His research may also shed light on such conditions as schizophrenia and epilepsy. According to Dr. Olivera, cone venom has a level of biochemical sophistication that the biomedical profession has yet to achieve in the laboratory. Dr. Olivera generously waived his usual honorarium for the COA.

**Welcome Party & Banquet**: Two special convention events are the welcome party and the banquet. This year's welcome party was a full buffet dinner with a wonderful assortment of foods. A new COA member from Canada sat at our table, and said that being at the convention made him feel "like he had died and gone to Heaven." Then he said, "And maybe I have!"

The banquet was a delicious meal with a great after-dinner slide show program, "Seashell Adventures," presented by Gary Schmelz, Ph.D. His sense of humor, superb slides, and interesting presentation were well received by convention goers. His talk was the perfect ending to the formal portion of the convention.

**Competitions**: There were two competitions held this year: a single shell competition and a lighthouse competition. The awards were handsome letter holders made of myrtle wood (found only in Oregon and Israel).

The results of the lighthouse competition were:

Category 1 Favorite Lighthouse (any source): **Robin Harris**, North Tonawanda, NY

Category 2 Lighthouse featuring 1 or more shells (any source): **Robert Pace**, Miami, FL

Category 3 Lighthouse featuring 1 or more shells (created by the exhibitor): **Charles Barr**, Rockford, IL

Category 4 Lighthouse photography by the exhibitor: **Brenda Russell**, Salem, OR

Category 5 Lighthouse stitchery by the exhibitor: **Linda Koestel**, Apopka, FL

The results of the Shell Show were:

Chardonnay Category (Self-collected worldwide): **Michael Small**, Ottawa, Canada *Conus adamsoni*

Pinot Noir Category (Worldwide any source): **Robert Pace**, Miami, FL, *Pterotyphis pinnatus*

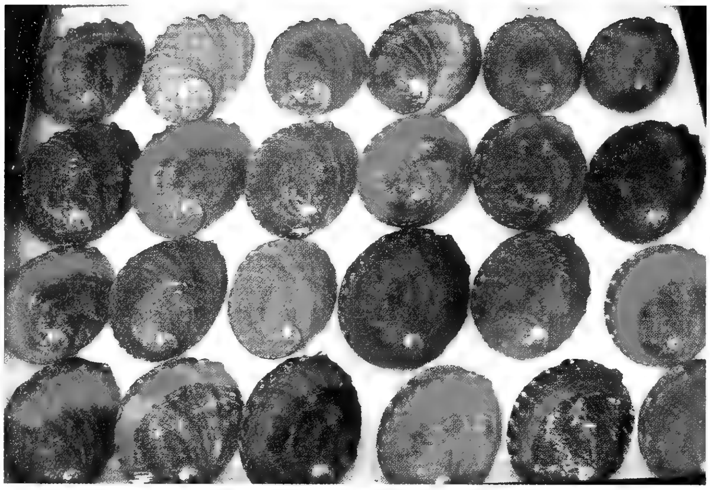
Riesling Category (NW Pacific Coast, any source): **Kelly Timm**, Salem, OR, *Ceratostoma foliatus.*

**Auctions & Bourse:** This year's Oral Auction raised a nice amount of money for the COA. I seem to remember the total approaching somewhere between $9,000 and $10,000 as the evening ended. Some offerings went at bargain rates, while others brought

**Collectors looking for that silent auction treasure. There were several silent auctions and as usual, the action in the pits could get rough.**

Hank Chaney discusses a finer point of conchology with Sue Hobbs during a break in the bourse activity. Anne Joffe can just be seen on the left.

Of course, it was really the shells that brought everyone there. The *Zoila* on this table alone would pay for quite a few college semesters.



Some very colorful *Haliotis assimilis* Dall, 1878, proved to be a popular item at the bourse.

Steven Coker (left) and Bob Lipe (right) relax in the hotel lobby. They are probably talking about the weather, or maybe about *Marginellas*.

Not all of the items offered at the bourse were sea shells. Next to this nice specimen of *Spondylus regius* Linnaeus, 1758, is a rock with several fossil shark's teeth from Morocco.

The very modern and efficient Portland Airport that served as a nice welcome to the area and a last minute opportunity to buy something non-shell related to take home.

more than anyone expected. One never knows how the bidding will go. The most fascinating offering was a two-week stay at the Fiji Islands home of a couple belonging to COA. It came complete with the services of caretakers for the property, there to cook, drive, or even play "Scrabble" with the guests!

The bourse is always a convention highlight for many, if not most, COA members. As someone said this year, the dealers from all over the world "really pulled out all the stops" to create a marvelous bourse for us. In addition to all of the shells, sea life, shell books, and shell-related items that we always expect, there are always some special treasures to be found. If you missed it, then you ought to make plans to attend next year's convention.


**COA 2008** - Following the annual meeting, we had a presentation on COA 2008, which will be held in San Antonio, Texas. Six Texas shell clubs have teamed up to put on this affair, which promises to be a well-organized and fun event. The official dates are 5 - 10 July 2008 in San Antonio ("the Alamo City"). Preconvention tours are tentatively scheduled for July 4th and 5th, with the COA activities from the 6th through the 10th of July. The hotel we will be in is The Crowne Plaza Riverwalk, scenically located on the city's famous Riverwalk, in the heart of the city. Reservations at the hotel may be made after December 2007 by calling 1/800-496-7621 (mention COA). Convention rates will be \$119 plus 16.75% sales tax. This special rate is available three days ahead of the convention and ends on Thursday night. Bear in mind that this will be the 4th of July weekend and there will be a special fireworks display on the 4th. For a virtual tour of the hotel go to www://CrownePlaza.com. The hotel is located about 10 miles from the airport and provides shuttle service for a fee.

A PowerPoint presentation on San Antonio was shown at the convention. Copies on CD can be obtained free of charge from Bob Nixon at: bob@bobnixon.com. There is also a web page that has been established for the Texas convention at: COA2008.org.

The 2009 convention is expected to return to Florida, although the exact location has not yet been announced. It looks like COA 2010 will be in Boston.


**Crowne Plaza Hotel in San Antonio, Texas, site of COA 2008.**

**Two of our hosts for the Texas convention: Jean Dickman (left) and Wanda Coker (right).**

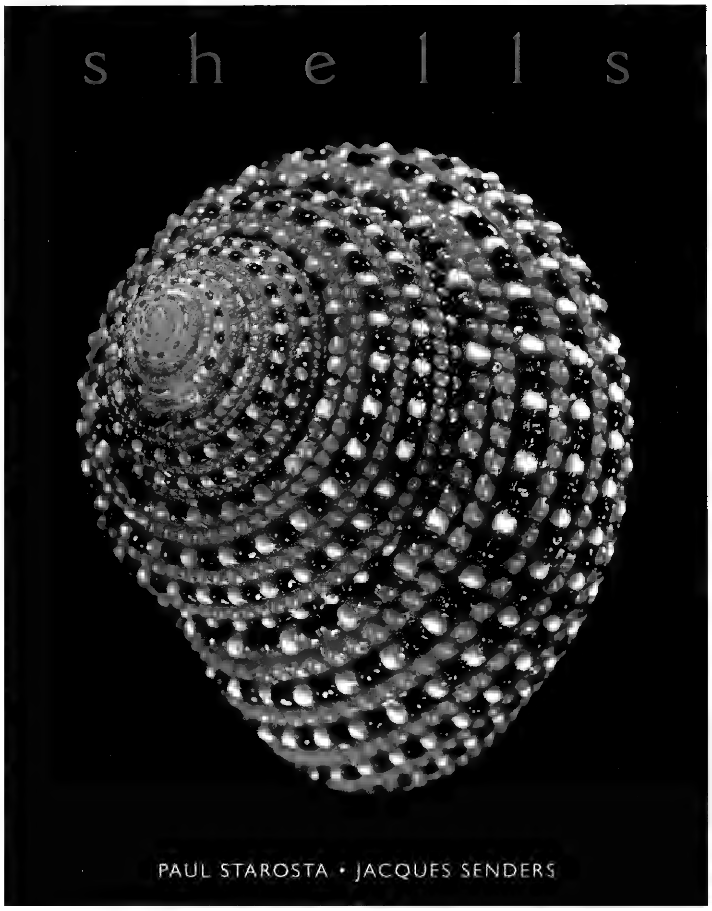
I stayed on at the hotel a day longer than many of the others, and that morning saw a notice in the lobby: "Mattress World Bingo Night, 7 to Midnight." It was at that point I truly realized the convention was over for another year. We had been replaced by mattress people.

José Leal of the Sanibel Museum ended his presentation with this quote from Robert Louis Stevenson's "A Child's Garden of Verses." I feel it makes a fitting closing to this write-up.

**"The World is so full of a number of things**
**I'm sure we should all be as happy as Kings!"**

# Shells

**by Paul Starosta and Jacques Senders, preface by Paolo Portoghesi, Firefly Books, expected publication date 15 October 2007, 9 ½ x 13 ½ inches, 384 pages, 300+ color photos, price: $85 hardcover ISBN-10: 1-55407-321-9 ISBN-13: 978-1-55407-321-4**




Shells are so much a part of our lives that we tend to take them for granted, no matter how passionate we are about them. We have internalized their shapes and colors to the extent that we forget that those are some of the characteristics that drew us to them in the first place. We know now that all those spines and frills, lattices and spirals are the language shells use to speak of their lives and their habitats, their relationships within the fantastically varied Mollusca. So it's hard for us to come at them with fresh eyes, to see their beauty and intricacy through the perception of the novice. "Shells," by photographer Paul Starosta and the noted and lifelong Belgian collector and malacologist Jacques Senders refreshes that aspect of shells for us in a stunningly beautiful new book.

"Shells" joins a large company of beautiful books on shells; it is reminiscent of Hugh and Marguerite Styx's 1973 classic among the shell coffee table books, *500 Million Years of Inspired Design*, in its rich photography and impressive size. With such a background in the field, it's hard for new authors to avoid sounding trite or stale, but Starosta and Senders manage to avoid that pitfall. Starosta photographs, unerringly, the exact view and angle of each shell that make it unique and beautiful. The common 1-inch *Meiocardia moltkiana* (Spengler, 1783) becomes a breathtaking full page vision of angels. And the size of the photographs converts exquisite bits of calcium carbonate around an inch or under, like the common cowrie *Palmadusta diluculum* (Reeve, 1845) and the slightly less common *Latiaxis mawae* (Griffith & Pidgeon, 1834), into 7 to 10 inch masterpieces. Most shells are pictured full or half page in a huge 13.5 x 9.5 inch format. That allows some large shell pictures! We are shown some colors and angles we probably have never noticed.

The shells selected are from the immense collection of diver and collector Jacques Senders and his wife Rita. Amid all of the splendor that such a legendary collection offers, most of the more than 300 shells pictured are common species: *Biplex perca* (Perry, 1811), *Vitta virginea* (Linnaeus, 1758), *Tonicella lineata* (Wood, 1815), *Hexaplex chicoreus* (Gmelin, 1791). Uncommon and rare shells are represented, with some seldom seen species like *Mipus vicdani* (Kosuge, 1980) and the strange and beautiful deepwater Caribbean turbinellid, *Columbarium brayi* Clench, 1959. Terrestrial species are also illustrated.

Two other features set the book apart from the great majority of picture books and give it a place not just on that beach house coffee table but also in any shell aficionado's library. The first of these features is the extensive and beautifully written Introduction by Paolo Portoghesi, a leading Italian architect and professor at La Sapienza University in Rome. Who better to appreciate the elegance and structural ingenuity of molluscan shells than a designer of buildings for people to work and play and live in? With the aid of his architectural education and a strong background in the classics, he draws nature and science into one, examining the spiral inherent to the structure of most shells. Fibonacci sequences and golden spirals, along with form and function issues, keep the reader on the edge of his or her learning curve. The relationships of shells with human beings, their uses as symbols in our cultures and as inspiration in our architecture are well explored. Illustrations abound, especially architectural ones like the Sydney Opera House, the Tower of Babel and spiral staircases, and a Felix Candela-designed restaurant in Xochimilco, Mexico, that resembles a huge *Tridacna* valve.

The second bonus feature is its thoroughness of coverage. In "A world of Curiosities," Senders examines the anatomy, nature, classification, predation, and reproduction and the human-mollusk relationship down through history and from culture to culture. Experienced collector Senders offers suggestions for collecting and conservation. A separate family-by-family section on classification concludes "Shells." Also, each pictured shell in the body of the book features a caption including family, genus and species, distribution, size and frequency. (We Americans would like to see author and date as well.)

All in all, this is a well-done and quite spectacular work, a publishing event. One could wish for a bit of bibliography and a better binding than the frugal but short-lived "Perfect Binding" so much in use now, but it deserves a place on our shelves and a bow of respect and congratulation to the authors.

Lynn Scheu
conchout@mindspring.com

# Terebridae A Collectors Guide

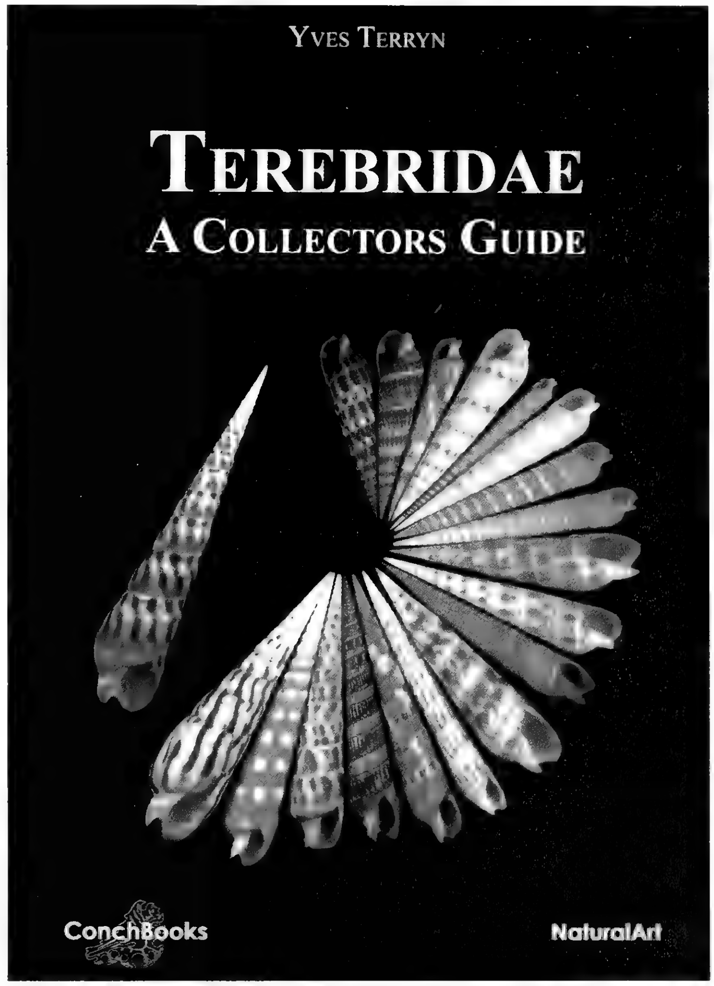
**By Yves Terryn 2007, Conchbooks, Hackenheim, Germany, 65 color plates, 124 pages, price is approx. $100 ISBN: 978-3-939767-01-5**

This newest book on Terebridae lists and illustrates 313 valid species. It is basically a pictorial handbook serving as a collector's guide with excellent color plates. Relative size is shown on each plate, with exact measurements of each species and a comparative section of enlarged photos of the final whorls and aperture, a nice assist in identification. There are also a few pages of plates of live animals that will be appreciated by scuba divers and shell collectors. The text for each species is limited to size and geographical distribution with comments. The listing is arranged in alphabetical order by genus, which I found convenient. The author did not implement the division into subfamilies suggested by others studying this family, stating he found no clear subfamily divisions and admitting to a need for further research. He divides the family into 14 genera and 8 unnamed taxonomic groups. The largest genus is *Terebra*, comprising more than a third of the total species in the family. *Terebra* is further subdivided into "*Terebra*" groups.

In 1987 Bratcher and Cernohorsky published a monograph on this family titled "Living Terebras of the World," in which 268 species were described and figured. In the last 20 years over 66 species have been added to this list, of which 58 are considered valid by Terryn. A few species in the Bratcher and Cernohorsky book that are now considered dubious are listed along with more recent synonyms and questionable species. Importantly, the author recommends using his guide in combination with the former work, as they complement each other.

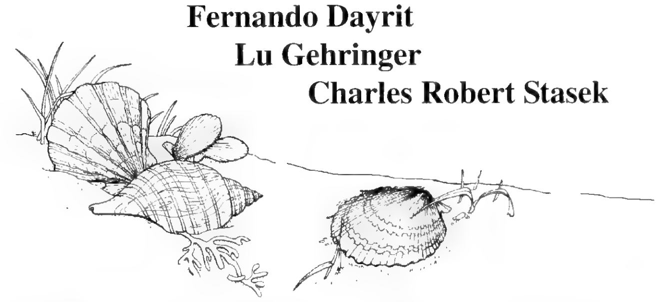
Terebridae date back to at least the Eocene and have a fairly rich fossil history. Recent Terebridae are tropical to sub-tropical sand-dwellers that are active at night. They are predators and many have specialized radular teeth and an associated venom gland like that found in *Conus*. Despite the seeming similarity in overall Terebridae structure and form, this is actually a family with a myriad of subtle structural characters that can make identification difficult to impossible without a reference such as "Terebridae A Collector's Guide." This fascinating family has long been a collector favorite and is well represented in Terryn's book. I strongly recommend acquiring this relatively inexpensive book. It is a must for any collector interested in this family and would be very useful for the general collector who occasionally has to identify a terebra. On behalf of all shell collectors I thank Yves Terryn and Conchbooks for an excellent publication.

Zvi Orlin.
2 Yavne Street
Kiryat Motzkin 26382, Israel




**In Memoriam:**

**Twila Bratcher-Critchlow**
**Helen Cornellisson**
**Fernando Dayrit**
**Lu Gehringer**
**Charles Robert Stasek**



# True Tales of *Tagelus*

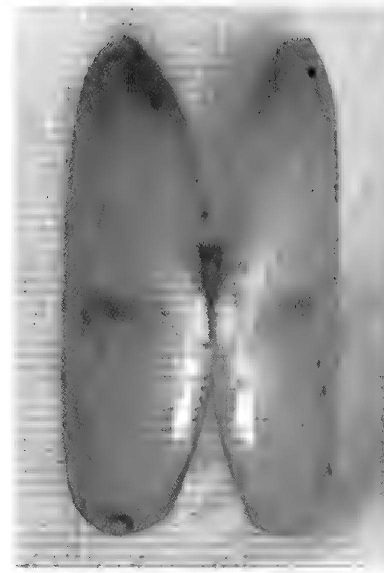
**By Steve Rosenthal**

Did you know that the eastern end of Long Island is home to world-record sized clams? Not that you should drop everything to change your travel plans or anything, but it presents a valid opportunity to highlight a couple of members of this fairly mundane group of bivalves. Shells of the genus *Tagelus* ("stout razor clams": family Solecurtidae) are burrowers. They like sand and mud bottoms in protected waters and in the right habitat can be among the most conspicuous large invertebrates. They have slightly compressed oblong shells with a wrinkled brownish periostracum. The shell is white with the periostracum removed. Abbott (1974) lists five species in the US, with only two found on the East Coast (both with given ranges of Cape Cod to Brazil).

Years ago on Long Island, it was noted that the two local species of *Tagelus* were either quite uncommon and localized (*Tagelus plebeius* (Lightfoot, 1786)) or in fact unknown or undocumented (*Tagelus divisus* (Lightfoot, 1786)). Let's start out by discussing the latter. *Tagelus divisus* is one of several US east coast species that seems to "skip" Long Island in its distribution, being found very commonly to the south, such as in the Carolinas and Florida, or to the north (e.g., southern Massachusetts). Since at least the formation of the Long Island Shell Club in 1975, no one had recorded a single specimen from New York. Prior to that, Jacobson and Emerson in "Shells from Cape Cod to Cape May," reported the species as occurring on Long Island, but with no further information. Why would a species "skip" such a large area with presumably favorable habitats?

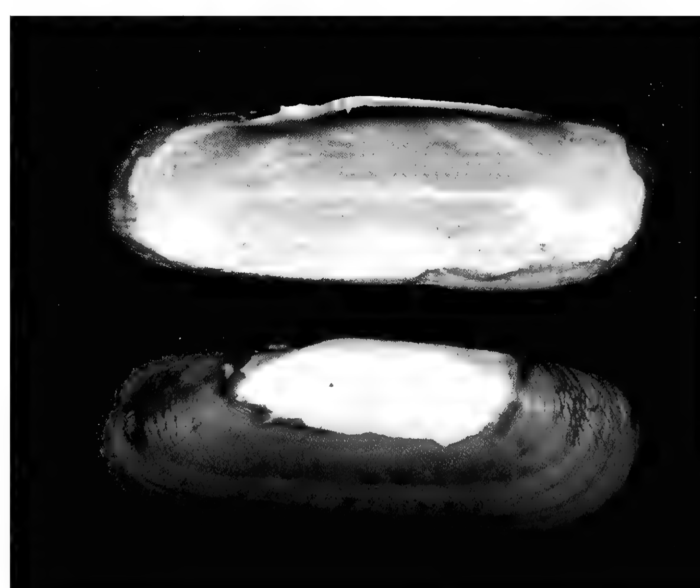
Rich Kelly and I were contemplating something to that effect on the shores of Shinnecock Bay, Long Island, just east of the Ponquogue Bridge, on March 15, 2003, when he noted that the quest had come to an end and picked up a tiny (literally fingernail sized) 10mm specimen of *Tagelus divisus*. Subsequently, my own search efforts paid off at another of our favorite shell spots, the bayside of Jones Beach State Park just east of the fishing piers at parking field 10, with the discovery of an adult-sized shell about 30mm in length. The date was April 21st, 2004. Three years later on April 14th, 2007, I found another specimen, about 15mm in length, washed ashore (with the animal inside!) at virtually the same spot on Jones Beach, after a few days of heavy winds. It makes one wonder, if there are only three shells, how did they get here? And will there be more? It seems odd they have apparently not fared better, while the *Tagelus plebeius* population has just exploded, if you will (read on).

A further note on *Tagelus divisus*: on a Peggy Williams trip to Venezuela, I was very pleased to obtain from the fishermen at Amuay, Venezuela, what looked like a REALLY large specimen of this shell. It seemed to be overlooked among the more "marquis" offerings presented to us. I remember taking special care upon packing for the trip home, wrapping it neatly in paper towels and then fitting it very snugly into a pill bottle that was just the perfect size. I got home and gradually unpacked and processed the shells from the trip, but I forgot about that one and one day realized it had never turned up. I can be disorganized about things like that, and reluctantly/dejectedly concluded it was lost somewhere in transit. A few weeks later I came into my kitchen and there in the middle of the floor was the pill bottle with my shell! I could only imagine that sometime upon my return the vial wound up on the floor and rolled out of view, and then somehow reappeared. I concluded a playful cat and the space under the refrigerator were involved, but I will never know for sure. In any case, at 53.6mm I believe that shell could be the world record size (WRS) holder. It would be one of several actual or potential WRS shells I saw on that trip from Amuay.



**The thumbnail-sized *Tagelus divisus* found on Long Island, New York in 2003. Photo by author.**

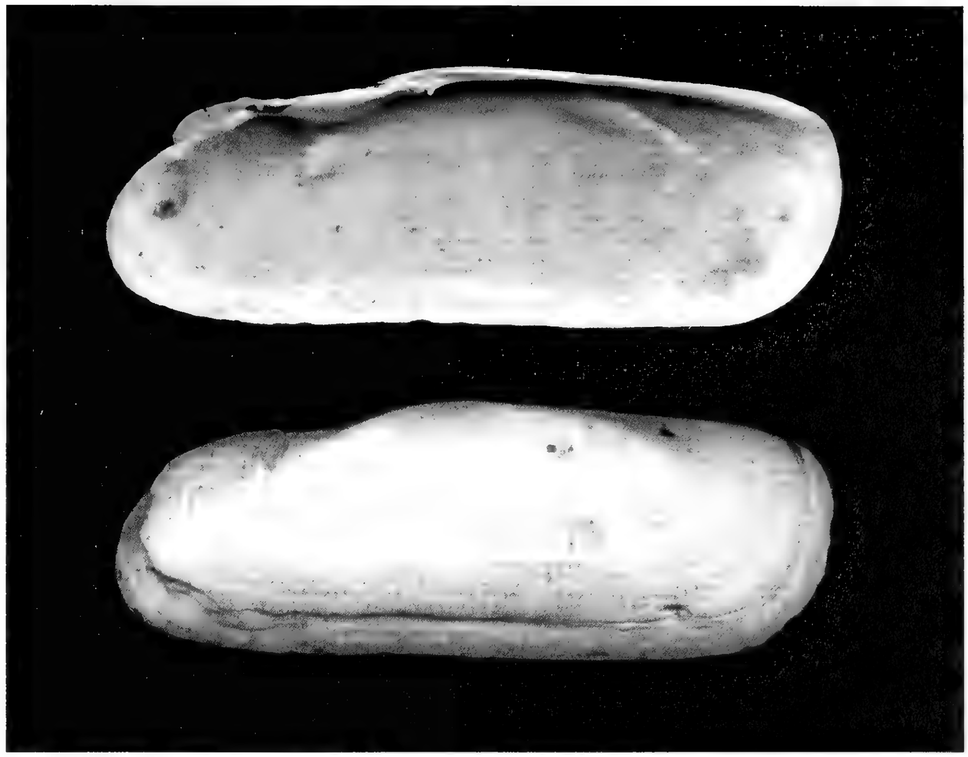
Now back to *Tagelus plebeius*. This species used to be an occasional find on trips out to the far eastern end of Long Island, in Suffolk County. The Long Island Shell Club's book, "Seashells of Long Island," noted it was common in several places on eastern Long Island such as Dam Pond in East Marion County (and they certainly covered the bottom when I snorkeled there last year). Specimens from western Long Island (Nassau County) were again not recorded since the inception of the Long Island Shell Club. Then beginning about 2001 I started noting with regularity a few *Tagelus plebeius* at Field 10 in Jones



***Tagelus plebeius*, 72mm, dead, mudflat, field #10, Jones Beach State Park, Coney Island, New York, 2002. Photo T. Eichhorst.**

Beach. Sometimes one shell every two trips or so, and then with increasing frequency to the point where it got to be more and more common. The peak was in the Fall of 2005, when I found one little muddy area they seemed to like that was full of empty adult shells. I must have found close to 100 pairs in that one area of only a few square yards. If I had to guess, it was a population that had become well established, had reached adult size and age, and had a natural die-off. I have also since found a few specimens in nearby Zachs Bay, so it would appear *Tagelus plebeius* has a good hold in Nassau County at present. This would appear consistent with the overall improved state of water quality and increased molluscan abundance.

The story does not end there. This past summer while staying at my sister's friend's home in Southold (near the NE tip of Long Island) I couldn't help but check out the beach at the end of the street. I didn't remember anything memorable from my one brief prior visit, but this time around I soon noticed there was something of note, big *Tagelus plebeius*. I grabbed a number of large pairs; the challenge was to find those that were not broken. All were dead and not terribly fresh looking, but I had a few OK ones by the time the tide came in. I was not able to measure them until we got back home a week later, but they were in fact worth the effort. They consistently measured between 113-118.5mm, exceeding the recorded WRS size of 110mm (another Rich Kelly shell from Eastern Long Island). I saw several single valves that might have been even larger, but I did not take them. For all I know there is a 120mm monster waiting out there. Teddy Roosevelt, a famous Long Islander, would no doubt be planning an expedition to go after them, had he known. Well, maybe not.



**Above: One of the large *Tagelus plebeius*, 114mm, Southold Bay, Suffolk Co., New York, 2006. Photo by T. Eichhorst.**

**Below: *Tagelus divisus*, 28mm, Hyannis, Massachusetts, 1950.**

*Tagelus* species listed in Abbott (1974):

*Tagelus affinis* (C.B. Adams, 1852) - S. California to Ecuador
*Tagelus californianus* (Conrad, 1837) - S. California to northern Mexico
*Tagelus divisus* (Spengler, 1794) - Cape Cod to Brazil
*Tagelus peruvianus* Pilsbry & Olssen, 1941 - Gulf of Cal. to Peru
*Tagelus plebeius* (Lightfoot, 1786) - Cape Cod to Brazil
*Tagelus politus* (Carpenter, 1855) - Central America to Peru
*Tagelus subteres* (Conrad, 1837) - S. California to Baja

Literature:
**Abbott, R. Tucker.** 1974. "American Seashells," Van Nostrand Reinhold Co., New York, 663 pp.
**Jacobson, Morris K., and Emerson, William K.** 1971. "Shells from Cape Cod to Cape May, with special reference to the New York City area," Dover, New York, 152 pp.
**Long Island Shell Club.** 1988. Seashells of Long Island, New York: a guide to their identification and local status," Long Island Shell Club, New York, 209 p.

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# American CONCHOLOGIST

Quarterly Journal of the Conchologists of America, Inc.

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 35, No. 4 December 2007**


In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***



**Visit the COA website: http://conchologistsofamerica.org. Subscribe to Conch-L, the COA listserver at: listserv@listserv.uga.edu Instructions for joining Conch-L are on the COA web site.**


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**Front cover: *Haminoea cymbalum* (Qouy & Gaimard, 1835) , photographed off Cook Island by Marcus Coltro. This small (8mm) but colorful mollusk is drab and transparent when cleaned and preserved. The attractive colors seen here are only evident in the living animal. Photograph courtesy of Femorale at: www.femorale.com.**

**Back cover: *Corculum cardissa* (Linnaeus, 1758), the heart cockle, is found throughout most of the Indo-Pacific. This small thin shell has a surprisingly sturdy structure to go along with its many color and pattern variations. It is a favorite of collectors. This image (courtesy of the artist) is just one of many superb shell paintings by S. Peter Dance.**

**Editor's Notes** (a correction, an announcement, & a clarification):

- In the last issue (Vol. 35, No. 3, September 2007), a book review of "Terebridae A Collectors Guide," listed the approximate price of the book as $100. This is incorrect. The price should have been listed as 48 Euro or about $70 US.

- The "2008 Shell Desk Diary" and "Sea Shell Wall Calendar," featuring the marine photography of Lynn Funkhouser (theme is: "Humans and the Health of the Seas") is available from the publisher:
Sea Promotions Inc. (281)397-0422 / Fax (281)397-0432
4606 FM 1960 West, Suite 400 #124, Houston, TX 77069
www.seapromo.com / deskdiary@seapromo.com
Back issues and a Daily Journal that complements the diary are also available.

- In the last issue (Vol. 35, No. 3, September 2007), Dr. Robert Robertson, in a letter to the editor, provided the reference for *Tateshia yadai* Kosuge 1986, an ecto-parasitic snail mentioned by Zvi Orlin in his article "More on Blood-Sucking Mollusks" in Vol. 35, No. 2, June 2007. The Orlin article was a follow up to an earlier article, "Bloodsucking Pyramidellids" by Robert Robertson in Vol. 34, No. 4, December 2006. In his letter, Dr. Robertson pointed out that *Tateshia yadai* was described in the family Olividae, but "The shell looks to me more like that of a marginellid than of an olivid."

Dr. Sado Kosuge read the comments and graciously forwarded a copy of his original description of *Tateshia yadai*. In his letter and in the original description, he agrees that the shell looks remarkably like that of a marginellid, but he points out that the anatomy of the animal (including the radula, nervous system, and other aspects) is much more aligned with the family Olividae. The image below is of the 10.7mm holotype from Dr. Kosuge's original description. Approximately 50 specimens were collected from the inside surface of pectoral fins on specimens of the lionfish *Helicolenus hilgendorfi* (Steindachner & Doederlein) netted from 300 meters deep off Kyushu, Japan.

*Tateshia yadai* Kosuge 1986

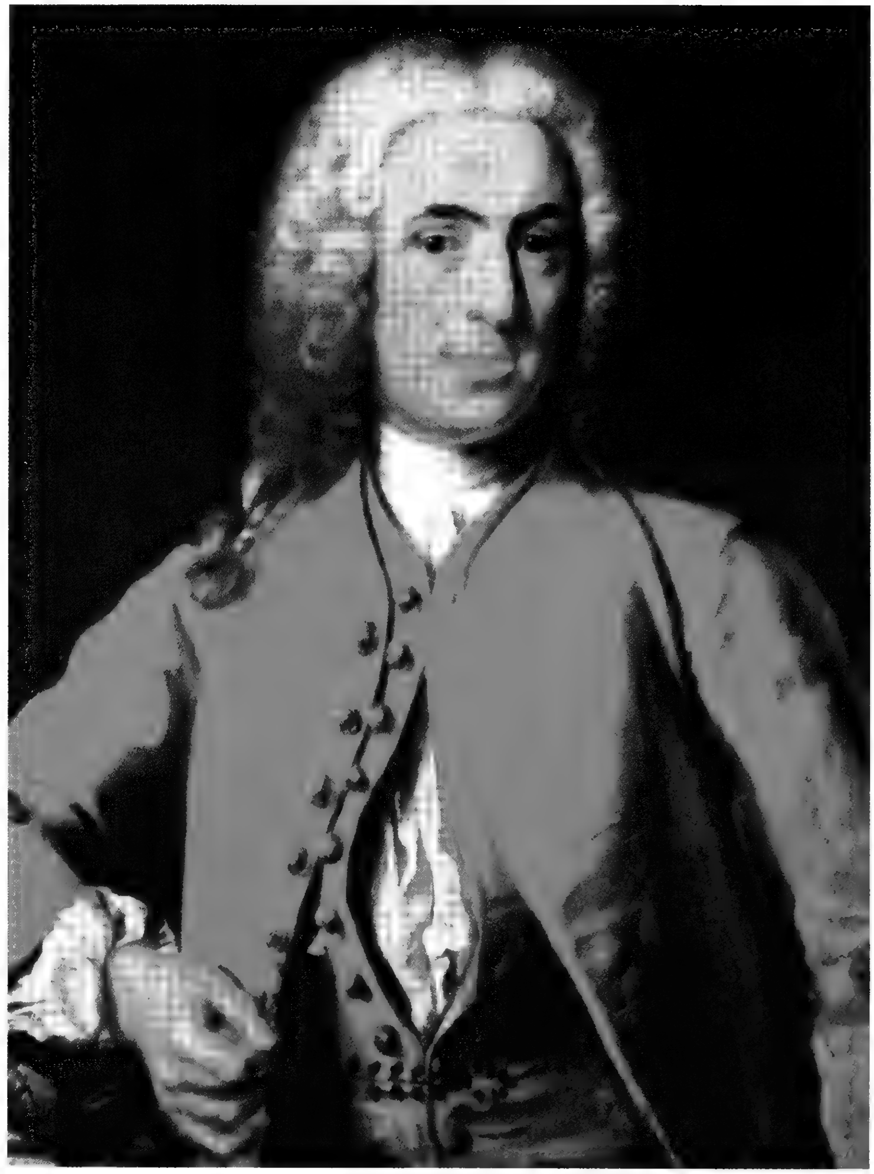
# Carl Linnaeus
## (Carl von Linné)
## 23 May 1707 – 10 January 1778

**by Bruce Neville**

**"God created; Linnaeus ordered."***

The year 2007 is an important anniversary for conchologists. Three hundred years ago this year, Carl Linnaeus was born in Råshult, Sweden. Linnaeus was one of the greatest scientists of his day, and his influence is still felt on our hobby, though his star no longer shines quite as brightly as that of some other figures in natural history. The number and influence of his written works is prodigious. He actually made many contributions to science beyond laying the foundations for taxonomy and systematics.

Like so many brilliant men, Linnaeus was also complex. His sense of self-importance is legendary, but he could also be charming and generous. As a young man (and possibly later, as well?), he was quite popular with the ladies. He was loved by (almost all of) his students; he referred to his favorites as "apostles." His lectures in everything from botany to assaying to child rearing were extremely popular. He was a darling of royalty. On this, the tercentenary of his birth, I'd like to "polish up his star" a little bit by reviewing Linnaeus, the man, his contributions to nomenclature, and of course, some comments on "his" shells. The biographical section draws primarily from Blunt's (2001) very readable biography of Linnaeus.



### Linnaeus, The Man

Carl Linnaeus was born on May 23, 1707, the eldest child of Nils Ingemarsson Linnaeus and Christina Brodersonia Linnaea. Nils Linnaeus was a parish priest, as well as an avid gardener and botanist; these latter pursuits he passed on to Carl at a very early age.

Like many great scientists, apparently, he was somewhat lackluster as a schoolboy. On graduating from the Gymnasium, he was declared "unsuitable" for the priesthood (which devastated his mother) or any other scholarly pursuit. Still, his tutors felt he might make a respectable doctor, so Carl entered Lund University in 1727. At Lund, he gained lodging with and tutelage under Dr. Kilian Stobaeus, the most highly regarded physician in the city. Stobaeus had an extensive library and cabinet, to which Linnaeus was (eventually) given free access. Among the other things he studied under Stobaeus was a course of lectures in conchology. It was in Lund that Linnaeus developed his habit of making botanical forays into the surrounding area, accompanied by other university students.

In 1728, Linnaeus transferred to Uppsala University, which had a better reputation as a medical school, where he made numerous friends and powerful scientific connections. In *Praeludium Sponsaliarum Plantarum*, a "term paper" at Uppsala, Linnaeus discussed the analogies between sexuality in plants and in animals; that plants were sexual creatures was actually a radical idea in the 1720s. This paper became the basis for Linnaeus's later "Sexual System" of classification of plants. The paper was brought

*origin unknown, but widely quoted

to the attention of Olaf Rudbeck the Younger, botanical lecturer at Uppsala, who had it printed at his expense and appointed Linnaeus Demonstrator of the Botanical Gardens at Uppsala, perhaps largely to avoid giving the necessary lectures himself. Linnaeus's lectures proved hugely popular, and Linnaeus became a private pupil and protégé of Rudbeck. It was also at Uppsala that Linnaeus met Peter Artedi. The two young men conceived a lifelong plan to catalog all of the plants, animals, and minerals and divided the various groups between them. In 1731, while still at Uppsala, Linnaeus made a voyage of exploration to Lapland, still a rugged and unexplored area, for the [Swedish] Royal Society of Science. The journey would take five months and 3000 miles.

In 1735, Linnaeus left Sweden for Holland, by way of Germany. On 23 June 1735, Linnaeus received his doctorate in medicine in Harderwijk, one of the first diploma mills, after a matriculation of only 5 days. Linnaeus became a favorite of Dutch scientific society and associated with many of the leading naturalists of the country. Johan Gronovius the Younger, another doctor and botanist, was so impressed with an early manuscript of Linnaeus's *Systema Naturae* that he had it published at his own expense in 1735. Only 29 copies of that first edition of 14 pages are known to exist. Money was always scarce for young Linnaeus. Late in 1735 and running desperately short of money, Linnaeus visited the botanical and zoological gardens of George Clifford at the Hartekamp, his estate outside Amsterdam. Linnaeus managed to arrange a job supervising the gardens at the Hartekamp, and Clifford became his host and patron for several years. While in Holland, Linnaeus renewed his friendship with Peter Artedi, who was also traveling in Holland. Sadly, barely a few weeks after their reunion, Artedi was to drown accidentally in a canal in Amsterdam, leaving their lifes' work to Linnaeus alone. While under Clifford's patronage, Linnaeus traveled for a month in England, where he again met and impressed many of the leading naturalists of the day.

Linnaeus returned to Sweden in 1738, this time by way of Paris. He established a medical practice in Stockholm and was, by all accounts, a successful doctor. In 1739, he married Sara Elisabeth ("Sara Lisa") Moraea. The year 1741 was busy for Linnaeus, with the birth of his son, Carl, Jr., exploratory journeys to Öland and Gotland, and relocation of the young family to Uppsala, where he was the new Professor of Medicine. The next few years were spent pleasantly, as Linnaeus worked to restore the botanical and zoological gardens at Uppsala and continued his botanical writings. Linnaeus continued with his popular lectures and his very popular botanical excursions into the countryside. The botanical excursions were quite festive and accompanied by horns and drums on their return to town. He performed additional exploratory journeys through Västergötland in 1746 and Skåne in 1749.

After Skåne, Linnaeus gave up journeying and sent out, instead, his "apostles," or favorite pupils. Most of the apostles will be more familiar to botanists, but among them was Daniel Solander, who will be familiar to conchologists. Solander sailed with Joseph Banks and Captain James Cook on the *Endeavour*, a voyage so successful that the British Navy began a tradition of sending naturalists on every such exploratory voyage. (Think of another young British naturalist eighty or so years later.) The apostles sent back specimens of plants and other natural history objects, including shells, for Linnaeus's growing collections.

In 1751, Linnaeus was summoned by Queen Lovisa Ulrika to the palace at Drottningholm to describe the royal botanical and zoological collections. Linnaeus became a favorite of the queen and apparently enjoyed his new role as royal courtier. In 1758, Linnaeus bought properties at Hammarby, about 6 miles from Uppsala, and Sävja, somewhat closer to town. These, especially Hammarby, became the family's summer homes, in order to escape the "Uppsala fever" (malaria) that ravaged low-lying Uppsala each summer and to which all of the Linnaeus family had fallen victim at one time or another. Linnaeus, who had suffered from "poor cash flow" through much of his youth, was sent into another fit of depression over the debts incurred in purchasing the properties. Still, Linnaeus managed to bring out yet another edition of the *Systema Naturæ*, the tenth, which is now taken as the starting point for all zoological nomenclature.

The Linnaeus family grew during this time, with the birth of daughter Elisabeth Christina (called Lisa Stina) in 1743, a daughter who died in infancy in 1744, daughter Lovisa in 1749, daughter Sara Christina (called Sara Stina) in 1751, son Johannes (1754-57), and daughter Sophia in 1757. Linnaeus's attitudes toward women reflected those of his time, and he refused to allow his daughters to be educated. He even refused Queen Lovisa Ulrika's offer to accept one of the girls at court, concerned that she might receive an education there.

In 1761, Linnaeus was ennobled, chiefly for his attempts to develop a cultured pearl industry in Sweden. It was at this time that he took the name von Linné. In 1764, he published the catalog of Queen Lovisa Ulrika's collection of insects and shells, the *Museum Ulricae*. In 1766, a fire burned much of Uppsala and threatened Linnaeus's home at the University, so a "museum" was built at Hammarby and Linnaeus's valuable collections moved there. The "museum" was all of sixteen feet square, but managed to house all his collections, his library, and his workbench.

Linnaeus's health was never good. He suffered from bad teeth and migraines for much of his life. He suffered a bout of severe depression and nearly had a nervous breakdown from overwork in 1748. This was partly the reason that he asked to have someone else perform the journey to Skåne the following year, for by now, he was an "old man of forty," but the King insisted that it be Linnaeus who make the journey. In 1774, he suffered the first of several strokes. In December 1777, Linnaeus insisted on some fresh air, despite the cold and rain. He took a chill from which he never recovered and died on 10 January 1778. Surprisingly, Linnaeus had left instructions for a simple burial, but his funeral on 22 January was a pompous affair of state. Linnaeus was cremated, and his ashes are buried in the Cathedral at Uppsala.

**Linnaeus and Nomenclature**

Of course, Linnaeus did not *invent* nomenclature. Every human society must develop a system of nomenclature for the species it encounters in order to pass along cultural knowledge: "X is good to eat," "Y stings," etc. The first recorded act of nomenclature occurs in Genesis: "and whatsoever Adam called every living creature, that was the name thereof" (Gen. 2:19).

Linnaeus did not, in fact, even invent *binominal* nomenclature. Binominal nomenclature is inherent in most vernacular nomenclature. Some species are so distinct that they require only one name, common or otherwise: terebellum, junonia. (Yes, I know they have binominal scientific names, but we'll get to that in a moment.) Other species are clearly related to each other

and are given a name that describes the *kind* or *genus*: abalones, augers. A second word must be added to the generic name to distinguish each *species*: red abalone, black abalone, flame auger, spotted auger.

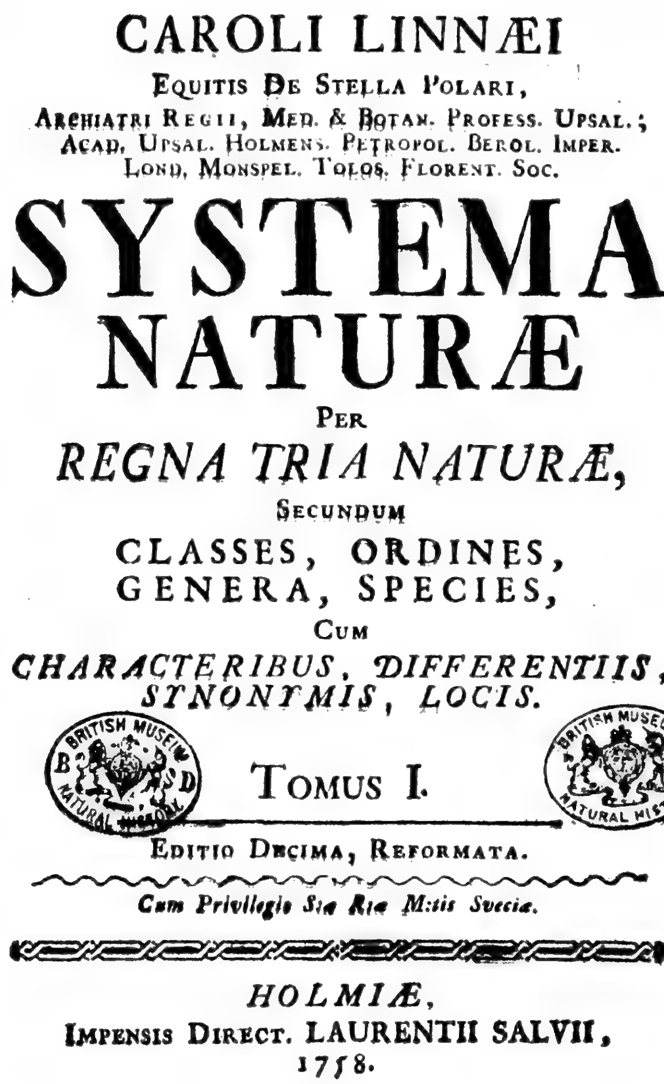
What, then, were Linnaeus's real contributions to nomenclature? His contributions are actually two: he separated the species name as a *label* from the species name as a *definition,* and he developed a *system* that could be applied universally and expanded as new species were discovered.

In Linnaeus's day, the name of a species had to serve both as a label for the species and as a definition. Such names required multiple words and served as "dichotomous keys" to identify the species involved. Thus, two volutes were called "*V. [Voluta] testa fusiformi, anfractibus spinis obtusis, columella octoplicata*" [Volute with fusiform shell, whorls with rounded spines, columella with 8 folds] and "*V. testa fusiformi, anfractibus spinis acutis, columella quadriplicata*" [Volute with fusiform shell, whorls with sharp spines, columella with 4 folds]. Throughout his life, Linnaeus never recognized the revolution he had begun and regarded these polynominal names as the *nomina specifica legitima.* Unfortunately, when a related species was discovered, the *nomina specifica legitima* of the "old" species had to be changed to accommodate the new discovery by adding another distinction between the "old" and "new" species. Thus, species names changed with every new discovery. Linnaeus felt that no genus would ever reach 100 species and thus the *nomen specificum legitimum* should never need to exceed 12 words.

As Linnaeus led his botanical forays, plants were generally identified only to genus in the field. When specific identification was necessary, Linnaeus and his followers would use, as a convenience, the *number* of the species in his *Fauna Suecica* or *Species Plantarum.* Thus, they might encounter in a single walk both *404 Filipendula* and *405 Filipendula.* When a genus contained only a single species (as many did at the time), even the number was not necessary and the genus name was used alone. Unfortunately, the numbers were not stable and changed with each edition.

In his *Systema Naturæ*, in addition to the number and the polynominal, Linnaeus included a word or phrase in the margin to serve as a "label" for convenience in conversation. This he called the "trivial" name. Thus, the two volutes mentioned above were given the trivial names "*Musica*" and "*Vespertilio*," respectively. [Note that initial capitals were common practice at that time.] These names sometimes mentioned a characteristic of the species, such as *Chama gigas* (now *Tridacna gigas*), but as frequently, they were simply conveniences, such as *Conus Mercator* ("the merchant"). These labels could remain unchanged as new species were added to the genus and their *nomina specifica legitima* grew ever longer. Linnaeus continued to designate both trivial and polynominal names for species throughout his career.

Others had used similar binominals for convenience, but Linnaeus was the first to apply the principle *consistently*. To those species in monotypic genera, where the generic name alone previously sufficed, Linnaeus added his label, e.g., *Scyllæa pelagica.* Although most of Linnaeus's marginal labels were single words, some were short phrases, such as *Ostrea Pes felis* and *Bulla Auris Midae*. It was not until 1948 that these "binary" names were


CAROLI LINNÆI
EQUITIS DE STELLA POLARI,
ARCHIATRI REGII, MED. & BOTAN. PROFESS. UPSAL.;
ACAD. UPSAL. HOLMENS. PETROPOL. BEROL. IMPER.
LOND. MONSPEL. TOLOS. FLORENT. SOC.
SYSTEMA
NATURÆ
PER
*REGNA TRIA NATURÆ,*
SECUNDUM
CLASSES, ORDINES,
GENERA, SPECIES,
CUM
*CHARACTERIBUS, DIFFERENTIIS,*
*SYNONYMIS, LOCIS.*
BRITISH MUSEUM NATURAL HISTORY
TOMUS I.
EDITIO DECIMA, REFORMATA.
*Cum Privilegio S:æ R:æ M:tis Sveciæ.*
*HOLMIÆ,*
IMPENSIS DIRECT. LAURENTII SALVII,
1758.

**A facsimile of the title page from Linnaeus's *Systema Naturæ* published in 1758. The system of zoological binominal nomenclature (with minor variations) established in this publication is the one we use today.**

aligned with the two-word "binomial" names (Linsley and Usinger 1959).

Naturalists of Linnaeus's day recognized the obvious relationships between many organisms and strived to make their classifications "natural," though the evolutionary reason for the relationships would not be fully elucidated for a century after the publication of the *Systema Naturæ*. Linnaeus's botanical classification based on the number of stamens and pistils was admittedly artificial, but eminently practical. Nevertheless, Linnaeus was astute in identifying the characters that signified "true" relationships between organisms. He recognized the importance of mammae in uniting the species of mammals and had on his walls at Hammarby a drawing of a whale connected to her calf by the umbilical cord. Linnaeus even coined the word "Mammalia" in the 10th edition of the Systema Naturæ. He didn't get everything correct, however, as he included the genus *Rhinoceros* within the Glires (rodents).

Many of Linnaeus's botanical genera were named for patrons; the more lavish their patronage, the more extravagant the plant with which they were honored. This system, of course, had its reverse side, and some of Linnaeus's enemies have been equally immortalized with various weeds, poisonous plants, or non-descript flowers. Nor was Linnaeus himself immune to such "honors." There is a genus *Linnaea*, with the single species *Linnaea borealis* Linnaeus 1753. In his *Critica Botanica*, Linnaeus commented with unusual modesty, "*Linnea* [sic] was no doubt given its name by Gronovius and is a plant in Lappland, of short growth, insignificant, overlooked, flowering only for a very short time; the plant is called after Linnæus, who resembles it" (quoted in Hagberg, as translated by Blair, 1952; 104). Linnaeus took this species as his own symbol, is usually pictured holding a flower, and included it in his coat-of-arms upon being ennobled.

Linnaeus was a religious man, though Linnaeus's God was as much the naturalistic deity of the Greeks as He was the Judeo-Christian God. When Linnaeus was in residence at Hammarby and unable to attend church on Sunday, his faithful dog would go in his place and sit in Linnaeus's pew (Blunt 2001; 182). The dedication to the *Systema Naturæ* includes several references to God and His creative efforts. During Linnaeus's lifetime and for a century or so after, natural history was a respected side-vocation of local clerics. Since species were created individually by God, Linnaeus had no religious objections to including the human species among the mammals and even the Primates, nor did it upset contemporary sensibilities. Linnaeus even included a second living species in the genus *Homo, Homo Troglodytes* Linnaeus 1758. Although he refers to it as "*Homo sylvestris* Orang Outang," the species is now thought to be based on a semi-fictitious "wild man" and a nomen dubium, certainly not the species now known as *Pongo* [originally *Simia] pygmaeus* (Linnaeus 1760). Variation within species was acknowledged, but was thought to be limited and according to His Plan. Later in life, Linnaeus modified his ideas and believed, at least for plants, that each *genus* was created as a unique form by God and that the species arose through hybridization among the various genera. This theory should not be confused with the later Darwinian theory of evolution through natural selection.

Linnaeus also laid out a series of rules, which he called "aphorisms," for naturalists to follow in naming new species in his *Fundamenta Botanica* (1736) and expanded them in his *Critica Botanica* (1737). Although they were developed for botanical use, they generally apply also to zoology. Many of the aphorisms form the basis of modern codes of nomenclature. For instance,

"213. All those plants which belong to one genus must be designated by the same generic name.

"214. All those plants which belong to different genera must be designated by different generic names.

"243. If a generic name is suitable, it is not allowable to change it, even for another which is more fitting.

"256. A plant is completely named when it is furnished with a generic and a specific name." (all aphorisms cited in Linsley and Usinger 1959; 40-41)

Linnaeus felt that the parts of the binominal names need not exceed 12 letters, and he shortened many generic names then in use. Aphorism 249 states that "Generic names an ell-long (*sesquipedalia)*, or difficult to pronounce, or unpleasant, are to be avoided" (cited in Linsley and Usinger 1959). Unfortunately, aphorism 249 did not make it into the current nomenclatural codes. Rowley (1956) coined the apt term "caconym" for these sesquipedalian names, both pre-Linnaean and current.

Although the concept of designating type specimens or type species came much later than Linnaeus, something of the type concept is also present in another aphorism:

"246. If an accepted genus has to be split up into several, according to the Law of Nature and Science, then the name which formerly belonged to the whole should be kept to denote the best known and official plant." (cited in Linsley and Usinger 1959; 40)

It has been suggested that Carl Linnaeus is the type specimen of *Homo sapiens* Linnaeus 1758, but there appears to be no official designation of a type for the species. Since Linnaeus did not specify a type specimen or type series (for any of his species), there can be no holotype, syntypes, or lectotype, though a neotype could be designated, if necessary. Stearn put it elegantly:

> Since for nomenclatural purposes the specimen most carefully studied and recorded by the author is to be accepted as the type, clearly Linnaeus himself, who was much addicted to autobiography, must stand as the type of his *Homo sapiens!* This conclusion he would have regarded as satisfactory and just. As he himself said, "*Homo nosce Te ipsum.* (Stearn 1959; 4)

Unfortunately, there is a prior claim. Edward Drinker Cope, an American paleontologist with one of the few egos that could compete with Linnaeus's, offered himself as the "type" of *Homo sapiens*. Cope's claim, however, also suffers from some "procedural difficulties," and he cannot be considered the type of the species, either. An interesting discussion of the conundrum is given by LaFee (2003), including a quote from our own Gary Rosenberg.

**The Linnaean Shells**

Between the tenth edition of the *Systema Naturæ* in 1758 and the *Mantissa Plantarum* in 1771, Linnaeus gave names to approximately 799 species of mollusk. An exact accounting of currently valid species is probably impossible. In my own accounting of Linnaeus's mollusks, I have found 661 species (including fossils) currently considered valid, 104 species considered unrecognizable or synonyms of others, and 34 species that I have not been able to track down. Thus, I suspect the total number of currently valid Linnaean species is just slightly under 700. I have developed an Excel spreadsheet of my results thus far. It is available as an email attachment from either the editor or myself. I would appreciate hearing about any errors or omissions, or if anyone can fill in the blanks.

Linnaeus erected 39 genera containing mollusks in the 10th edition of the *Systema Naturæ* in 1758: *Monoculus, Teredo, Limax, Doris, Scyllæa, Sepia, Chiton, Pholas, Mya, Solen, Tellina, Cardium, Donax, Venus, Spondylus, Chama, Arca, Ostrea, Anomia, Mytilus, Pinna, Argonauta, Nautilus, Conus, Cypræa, Bulla, Voluta, Buccinum, Strombus, Murex, Trochus, Turbo, Helix, Nerita, Haliotis, Patella, Dentalium,* and *Serpula*. In the 12th edition of the *Systema*, he added *Mactra, Laplysia*, and *Clio*. *Laplysia* has since been suppressed by ICZN Opinion 200. Most of these were in his Class Vermes. The order "Vermes Testacea" is almost entirely composed of mollusks, though he also included some molluscan species in his Vermes Intestina and Vermes Mollusca. ("Mollusca" refers to soft bodies without shells, rather than the current concept of the name.) At least one species was even included among the Insecta Aptera (wingless insects).

Some of his genera are reasonably close to the modern concept of those genera, or at least the family. With a few exceptions, his species of *Conus*, *Tellina*, and *Cypræa* are still considered in the same genera (or at least closely related genera) today. His species of *Strombus* are mostly still in *Strombus*, or at least in *Lambis*, in the same family, although *Strombus ater* Linnaeus 1758, is now the very unrelated *Faunus ater* (Linnaeus 1758). His genera *Buccinum, Murex, Turbo,* and *Helix*, however, were "catch-all" genera for a variety of forms that he could not place elsewhere. The Linnean genus *Murex*, for instance, contained *Murex tribulus* Linnaeus 1758, as well as such widely unrelated species as *Cymatium femorale, Melanopsis cariosus, Tibia fusus, Turris babylonia, Syrinx aruanus, Netpunea despecta,* and *Rhinoclavis vertagus*, all of (Linnaeus 1758)!

Linnaeus was even more confused about some of his other genera. His *Nautilus* contained *Nautilus pompilius* Linnaeus 1758, of course, but most of the rest of the species are foraminifers. His genus *Anomia* includes two or three species "(depending on whether *Anomia squamula* is treated as a valid species or a synonym of *Anomia ephippium* Linnaeus, 1758) of bivalve mollusks, but the rest of the species in the genus are brachiopods. The confusion is certainly understandable, given the striking superficial convergence of the brachiopods and the bivalve mollusks, and even of the foramen for the peduncule of the brachiopod to the byssal opening of the anomiids. In his genus *Monoculus*, Linnaeus included a species of tiny pteropod mollusk and the very macroscopic horseshoe crab, now *Limulus polyphemus* (Linnaeus 1758)! His genus *Serpula* included the worm-like tubes of a variety of animals, including polychaetes and both bivalve (*Brechites penis* (Linnaeus 1758)) and gastropod (*Siliquaria anguina* (Linnaeus 1758)) mollusks! Yet, he recognized *Dentalium* as distinct from the other "worm tubes."

It is interesting to ponder on the source of Linnaeus's trivial names. While many are descriptive of the species, others show a distinct pattern. Within *Cypræa*, he chose the names of animals for many of his species: *argus* (the peacock), *testudinaria* (the tortoise), *zebra*, *talpa* (the mole), *mus* (the mouse), *tigris*, *hirundo* (the swallow), *pediculus* (the louse, now a triviid), *cervus* (the deer), and more. Within *Conus*, he often chose human trades: *generalis*, *virgo* (okay, maybe not a trade), *capitaneus*, *miles* (the soldier), *princeps*, *senator* (now unrecognizable), *monachus* (the monk), *magus* (the magician), and more. Some of the names he chose for his species of *Venus* have ties to the Goddess of Love: *Dione* (the mother of Venus), *paphia* (from Paphos, a city on Cyprus sacred to Venus), and *Erycina* (a mountain in Sicily with a temple to Venus). *Venus Meretrix* has a less mythological derivation.

Linnaeus also seems to have had a finely developed sense of the scatological. Some of his names (for the faint of heart, I will refrain from listing them here) often bear testimony to the bearer's likeness, real or imagined, to various parts of the human anatomy. He has been called the "Father of Botanical Pornography," and his sexual system of classification for plants made botany, a formerly appropriate pastime for young ladies, decidedly *un*-ladylike!

Some of his names are simply elegant. *Tellina Lingua felis* (now *Tellina linguafelis* Linnaeus 1758) is perfectly descriptive of the texture of this wonderful shell. *Arca Noae* (Linnaeus 1758) may not be descriptive, but is a wonderful play on words; if Linnaeus hadn't come up with it, I'm sure someone else would have.

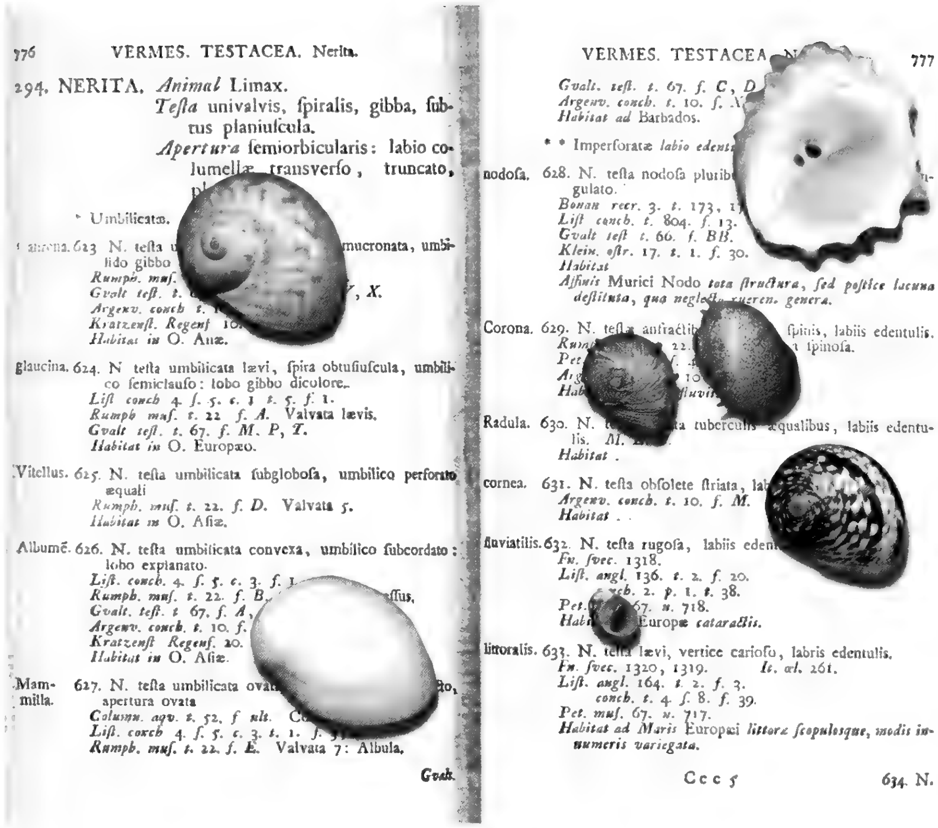
It is also interesting to speculate on the origins of some of the shells to which Linnaeus gave names. Most are common species of Europe (terrestrial, freshwater, and marine), the Mediterranean, and the Indo-Pacific. Some are so common that they are almost never offered by dealers. I have literally seen barrels of *Liguus* [originally *Buccinum*] *virgineus* (Linnaeus 1758) in the shell shops in Florida, but just try to find a specimen with decent locality data. Among those ultra-common species, however, are a number of "zingers," such as *Harpa* [originally *Buccinum] costata* (Linnaeus 1758) and the no-longer-rare *Epitonium* [originally *Turbo] scalare* (Linnaeus 1758). Why, of all the wonderful cones from the western Atlantic, did he name only *Conus granulatus* Linnaeus 1758 and *Conus ammiralis* var. *cedo-nulli* Linnaeus 1767 (now simply *Conus cedonulli*), two species that remain among the rarest in the region? Again, using examples from *Conus*, which are more familiar to me, many of his Indo-Pacific species are widespread throughout the region, while at least two, *Conus Aurisiacus* Linnaeus 1758 and *Conus nobilis* Linnaeus 1758, are endemic to the waters around Indonesia. Perhaps those years spent in Holland gave him access to materials collected in the Dutch East Indies?

Another generality among Linnaean species is that they are generally medium-sized to large. While some, such as *Pupilla* [originally *Helix] muscorum* (Linnaeus 1758) and *Alvania* [originally *Turbo] cimex* (Linnaeus 1758), are fairly small, the list of Linnaean species is heavily skewed toward the larger end of the size spectrum.

Following his father's death, Carl, Jr., rejected offers to purchase the Linnaean collections, including one from Sir Joseph Banks in England. Upon Carl, Jr's, sudden death of a stroke in 1783, the Widow Linnaea again offered the collection for sale. Linnaeus's successors petitioned the King for assistance in keeping the collections in Sweden, but the King was traveling. Meanwhile, Banks and James Edward Smith secured funding and managed to snatch the collections from numerous other interested buyers. Linnaeus's collections, including approximately 1500 shells, his library, and his correspondence, left for England in 1784. The Linnean Society of London was founded in 1788 and now houses the collections. (Blunt 2001)

In the last century or so, Linnaeus has not had the exposure that he certainly deserves—certainly not as much as *he* would have thought he deserved! If the only thing he had left us was binominal nomenclature, Linnaeus would deserve recognition, but he made other contributions to the natural sciences, as well. I hope you've

enjoyed this brief insight into a larger-than-life personality and will give him a second thought next time you see "(Linnaeus 1758)" tacked onto one of your shells.


776 VERMES. TESTACEA. Nerita.

294. NERITA. *Animal* Limax.
*Teſta* univalvis, ſpiralis, gibba, ſubtus planiuſcula.
*Apertura* ſemiorbicularis: labio columellæ transverſo, truncato,

* Umbilicatæ.

623 N. teſta u... mucronata, umbilido gibbo
*Rumph. muſ.*
*Gvalt teſt. t.* ... , X.
*Argenv. conch t.*
*Kratzenſt. Regenſ* 10.
*Habitat in* O. Aſiæ.

glaucina. 624. N. teſta umbilicata lævi, ſpira obtuſiuſcula, umbilico ſemiclauſo: lobo gibbo dicolore.
*Liſt conch* 4. *ſ.* 5. *c.* 1 *t.* 5. *f.* 1.
*Rumph muſ. t.* 22 *f. A.* Valvata lævis.
*Gvalt teſt. t.* 67. *f. M. P, T.*
*Habitat in* O. Europæo.

Vitellus. 625. N. teſta umbilicata ſubgloboſa, umbilico perforato æquali
*Rumph. muſ. t.* 22. *f. D.* Valvata 5.
*Habitat in* O. Aſiæ.

Albumē. 626. N. teſta umbilicata convexa, umbilico ſubcordato: lobo explanato.
*Liſt. conch.* 4. *ſ.* 5. *c.* 3. *f.* 1.
*Rumph. muſ. t.* 22. *f. B.* ... ſſus.
*Gvalt. teſt. t* 67. *f. A*,
*Argenv. conch. t.* 10. *f.*
*Kratzenſt Regenſ.* 20.
*Habitat in* O. Aſiæ.

Mammilla. 627. N. teſta umbilicata ova... ſo, apertura ovata
*Columm. aqv. t.* 52. *f ult.* C
*Liſt. conch* 4. *ſ.* 5. *c.* 3. *t.* 1. *f.*
*Rumph. muſ. t.* 22. *f. E.* Valvata 7: Albula.

Gvalt.

VERMES. TESTACEA. N... 777

*Gvalt. teſt. t.* 67. *f. C, D*
*Argenv. conch. t.* 10. *f.*
*Habitat ad* Barbados.

* * Imperforatæ *labio edent*

nodoſa. 628. N. teſta nodoſa pluribus ... gulato.
*Bonan recr.* 3. *t.* 173, 1
*Liſt conch. t.* 804. *f.* 13.
*Gvalt teſt t.* 66. *f. BB.*
*Klein. oſtr.* 17. *t.* 1. *f.* 30.
*Habitat*
*Affinis* Murici Nodo *tota ſtructura, ſed poſtice lacuna deſtituta, qua negle... genera.*

Corona. 629. N. teſtæ anfractib... ſpinis, labiis edentulis.
*Rum* ... 22. ... ſpinoſa.
*Pet*
*Arg* ... 10
*Hab* ... *fluvi*

Radula. 630. N. ... tuberculis æqualibus, labiis edentulis. *M.*
*Habitat* .

cornea. 631. N. teſta obſolete ſtriata, lab
*Argenv. conch. t.* 10. *f. M.*
*Habitat* . .

fluviatilis. 632. N. teſta rugoſa, labiis eden
*Fn. ſvec.* 1318.
*Liſt. angl.* 136. *t.* 2. *f.* 20.
*conch.* 2. *p.* 1. *t.* 38.
*Pet.* ... 67. *n.* 718.
*Hab* ... Europæ *cataractis.*

littoralis. 633. N. teſta lævi, vertice carioſo, labris edentulis.
*Fn. ſvec.* 1320, 1319. *It. œl.* 261.
*Liſt. angl.* 164. *t.* 2. *f.* 3.
*conch. t.* 4. *ſ.* 8. *f.* 39.
*Pet. muſ.* 67. *n.* 717.
*Habitat ad Maris* Europæi *littora ſcopuloſque, modis innumeris variegata.*

Ccc 5 634. N.

**Pages 776 and 777 from Linnaeus's *Systema Naturæ* of 1758. Here he begins his coverage of the group he termed "*Nerita*." Under this name Linnaeus combined present-day Neritidae and Naticidae, with a few stragglers from Muricidae and Trochidae. Linnaeus differentiated between what we call Neritidae and Naticidae by the presence (his "umbillicata") or absence (his "imperforatæ") of an umbillicus. The shells shown on the pages above are (clockwise from the top right): *Purpura nodosa* (L. 1758), *Clithon corona* (L. 1758) (two specimens), *Neritodryas cornea* (L. 1758), *Theodoxus fluviatilis* (L. 1758), *Polinices mamilla* (L. 1758), and *Natica canrena* (L. 1758). Linnaeus's name is in parentheses behind each name because none of these species is still with his original placement in the genus *Nerita*.**

**Literature Cited and Selected Readings:**


**Abbott, R. Tucker, 1974.** American Seashells, 2nd ed. New York: Van Nostrand Reinhold, 663 pp., 24 pls.

**Blunt, Wilfrid. 2001.** Linnaeus: The Complete Naturalist. Princeton and Oxford: Princeton University Press, 264 pp. Note: Much of the biographical information in this essay was gleaned from Blunt's work. Uncredited information can be presumed to derive from it; errors are my own.

**Dodge, Henry. 1952-59.** A historical review of the mollusks of Linnaeus. New York: American Museum of Natural History, 7 vol. Available open-access from the Museum at http://digitallibrary.amnh.org/dspace/handle/2246/7; easiest to browse by author for numbers.

**Hagberg, Knut. 1952.** Carl Linnæus. Translated from the Swedish by Alan Blair. London: Jonathan Cape, 264 pp.

**Hanley, Sylvanus. 1855.** Ipsa Linnaei Conchylia: the Shells of Linnaeus, determined from his manuscripts and collections. London: Williams & Norgate, 556 pp.

**Jaeger, Edmund C. 1955.** A Source-book of Biological Names and Terms, 3rd ed. Springfield, Ill.: Charles C. Thomas, xxxv + 323 pp.

**LaFee, Scott. 2003 (15 Oct).** Not my type: when it comes to singling out a specimen for classifying humans as species, it doesn't pay to be particular. San Diego Union-Tribune. Available at: http://www.signonsandiego.com/news/features/20031015-9999_1c15type.html. Accessed 14 November 2007.

**Linnaeus, Carl. 1736.** Fundamenta botanica quæ majorum operum prodromi instar theoriam scientiæ botanices per breves aphorismos tradunt. Amstelodami [i.e., Amsterdam]: Salomonem Schouten, 35 pp.

**Linnaeus, Carl. 1737.** Critica botanica in qua nomina plantarum generica, specifica & variantia examini subjiciuntur, selectoria confirmantur, indigna rejiciuntur: simulque doctrina circa denominationem plantarum traditur, seu Fundamentorum botanicorum pars IV. Lugduni Batavorum: C. Wishoff, 270+ pp. English translation by Sir Arthur Hort pub. in 1938 by the Ray Society.

**Linnaeus, Carl. 1753.** Species Plantarum, exhibentes plantas rite cognitas, ad genera relatas, com differentiis specificis, nominibus trivialibus, synonymis selectis, locis natalibus, secundum Systema Sexuale digestas. Holmiæ [i.e., Stockholm]: Laurentii Salvii, 2 vol.

**Linnaeus, Carl. 1758.** Systema Naturæ per Regna Tria Naturæ, secundum, classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Editio decima, reformata. Tomus I. Holmiæ [i.e., Stockholm]: Laurentii Salvii, 823 pp. Issued in facsimile by the British Museum (Natural History), 1939. Also available at Google Books: http://books.google.com/.

**Linnaeus, Carl. 1764.** Museum S:ae R:ae M:tis Ludovicæ reginæ Svecorum, in quo animalia rariora, exotica, imprimis insecta & conchilia describuntur & determinantur; prodromi instar editum. Holmiæ [i.e., Stockholm]: Laurentii Salvii, 720 pp.

**Linnaeus, Carl. 1766-68.** Systema Naturæ per regni tria naturæ, secundum classes, ordines, genera, species, cum charateribus, differentiis, synonymis, locis. Editio duodecima, reformata. Holmiæ [i.e., Stockholm]: Laurentii Salvii, 3 vol.

**Linnaeus, Carl. 1771.** Mantissa Plantarum altera generum editionis VI et specierum editionis II. Holmiæ [i.e., Stockholm]: Laurentii Salvii, 587 pp.

**Linsley, E.G., and R.L. Usinger. 1959.** Linnaeus and the development of the International Code of Zoological Nomenclature. Systematic Zoology, 8:39-47.

**Rowley, G. 1956.** Caconymy, or a few short words against many long ones. National Cactus and Succulent Journal, 11:3-4.

**Stearn, W.T. 1959.** The background of Linnaeus's contributions to nomenclature and the methods of systematic biology. Systematic Zoology, 8: 4-22.


**Bruce Neville: bneville@unm.edu**

# Shelling Trip to Tibet

## by He Jing

In a meeting in Shanghai, when I asked 20 people if they had traveled abroad, more than half answered yes. But when asked if anyone had the experience of traveling in Tibet, the answer was no. I had planned to visit Tibet for years and my dream turned into reality in the summer of 2007. I flew at 10:00 AM on August 2nd from Shanghai, changed flights in the famous city of Xi'an, and arrived at Lhasa, the capital of Tibet, at 3:00 PM.

Lhasa is surrounded by high mountains and features the Potala Palace, an imposing mountain top structure from ancient Tibet (Fig. 1). The elevation of the city is 3700-3800m (12,140-12,450 feet), and that of the surrounding mountains is 4500-6200m (14,760-20,340 feet). Fortunately, I didn't experience altitude sickness as many travelers to this area suffer and was able to enjoy the scenery (Fig. 2).

**Fig. 1 The Potala Palace in two-mile-high Lhasa, Tibet. This large structure is a popular tourist attraction and makes a perfect photo opportunity.**

**Fig. 2. The author on the Tibetan Plateau at an elevation more than two miles above sea level.**

I started to collect shells the next day. I tried to find some freshwater shells first. I spent half of my first day looking for *Viviparus* and *Unio* species, but failed. Local people told me they had never seen *Viviparus* or *Unio* species in Lhasa. It was time to broaden my search efforts.

The first shell I collected in Tibet was a *Lymnaea* species (Fig. 3). It was found in a mountain stream at about 3700m (12,140 feet). The stream was overgrown with grass and had a muddy and sandy substrate. In the same stream, I found another freshwater shell, a small (less than 5mm) *Hippeutis* species (Fig. 4).

In a famous temple in Lhasa, I found some snails on a very old tree, but the monks asked me not to kill the snails, so I did not collect them. I tried to find this species away from the temple, but in vain. The picture (Fig. 5) shows these small snails and a slug that was also on the tree.

Four days later I traveled to Linzhi, a town with very short history. About 50 years ago, the Chinese army set up a base here and a town grew up around it. The elevation at Linzhi is about 2700m (8,858 feet) and the mountains surrounding the town are about 3000m - 4200m (9,842 - 13,779 feet).

The first shell I found in Linzhi was *Mirus thibetanus* (Heude, 1882) (Figs. 6 & 7). I found it in a forest on Biri Saint Mountain at an elevation of about 3200m (10,498 feet). On this same mountain I found several specimens of *Bradybaena ravidella* (Moellendorff, 1899) (Figs. 8 & 9). These small snails were buried in leaf litter and mud.

In the Niyang river, I found some *Radix auricularia* (Linnaeus, 1758) (Figs. 10 & 11). The river bottom was sandy, but covered with many stones. The elevation was about 2700m (8,858 feet). These small snails are fairly common in much of the world and can be found in both Europe and the United States. The shells were about 14mm.

By the eighth day of my visit to Tibet, I had become quite confident with my travel abilities and decided to explore the Tibetan Plateau. I decided to go to Namucuo, a large lake on top of the Tibetan Plateau. To reach the lake, travelers must first cross the high mountains surrounding the lake. The elevation of the mountains is 5200-7200m (17,000-23,600 feet) (Fig. 12) and the elevation of the lake surface is 4718m (15,479 feet).

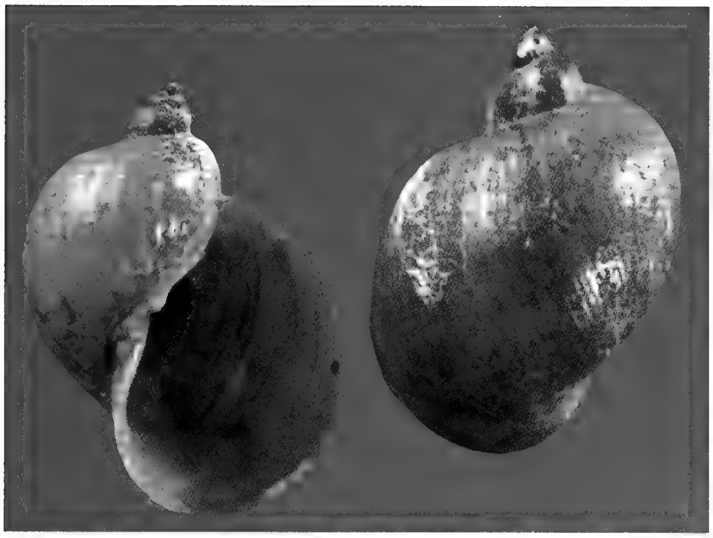


Fig. 3. A *Lymnaea* species collected in a small stream at 3700-3750m. The shell is 22.5mm high and 11.3mm wide.

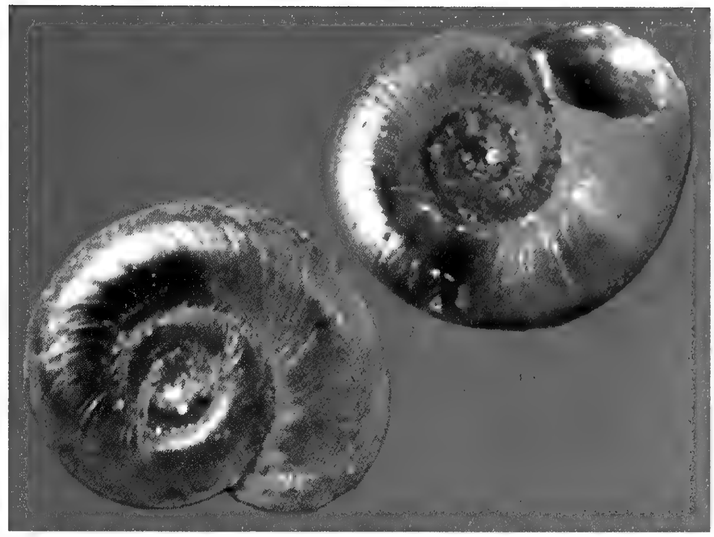


Fig. 4. In the same stream with the *Lymnaea* I found this small *Hippeutis* species. The shell is 4.7mm by 1.4mm.

Fig. 5. This old tree with small snails and a large slug was outside a temple in the capital city of Lhasa. The monks did not want the animals collected.

Fig. 6. *Mirus thibetanus* (Heude 1882), in situ on Biri Saint Mountain. It is about 8mm in length.

Fig. 7. *Mirus thibetanus* from Tibet.

Fig. 8. *Bradybaena ravidella* (Moellendorff 1899) on Biri Saint Mountain, found buried in leaf litter.

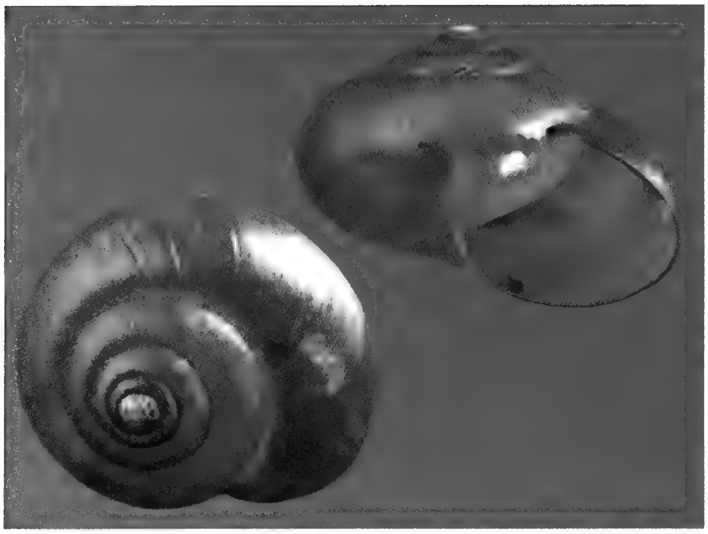


Fig. 9. The cleaned shell of *Bradybaena ravidella*.

Fig. 10. *Radix auricularia* (Linnaeus 1758), with the animal still in the shell. The shell is about 14mm.

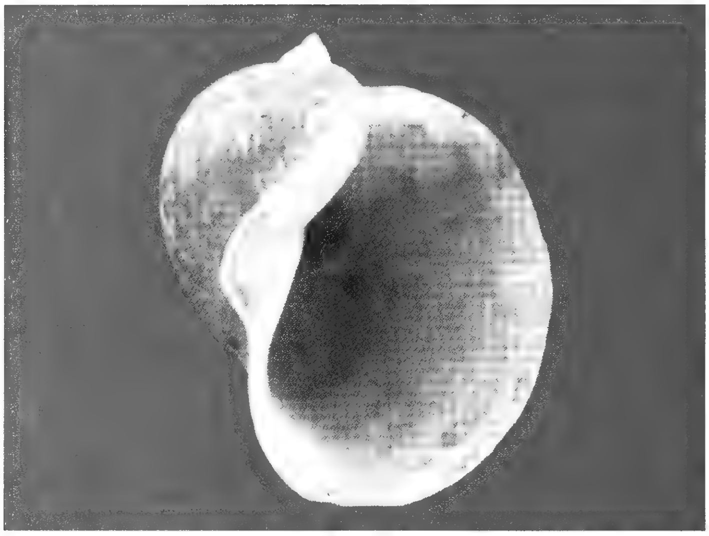


Fig. 11. *Radix auricularia* without the animal. This freshwater snail has been introduced around the world.

Fig. 12. Lake Namucuo in August. This lake is sacred to the local populace and just as cold as it looks.

Fig. 13. The unusual snail shell I found along Lake Namucuo.

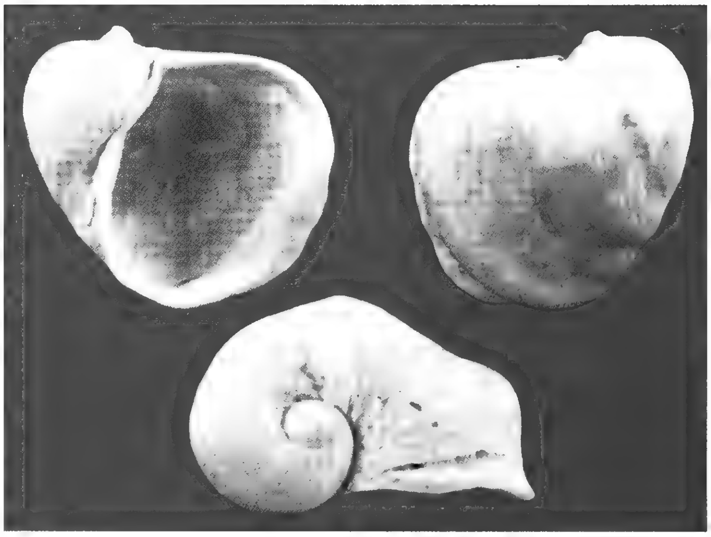


Fig. 14. A composite view of the mystery snail from Lake Namucuo, Tibet.

Lake Namucuo is a sacred or holy lake in Tibet. For religious reasons, no one can fish in the lake. In fact, even putting your feet into the water is considered very offensive to local people. The only way to collect shells in Namucuo is to walk along the beach looking for dead shells. This was a very cold walk. Even in August, the warmest season in Tibet, it is only about 8-10°C (46-50°F) at noon and below 0°C (32°F) at night. The temperature in the lake stays just above freezing, so the biomass of the lake is limited. It was not easy to find shells on the beach. I walked about ten hours searching for shells. I am very glad that I was able to walk for such a long period at that elevation. Most fellow travelers were limited to about an hour before feeling the effects of the elevation.

My efforts walking along the lake shore finally paid off as I found an unusual gastropod shell among the rocks on the shore (Figs. 13 & 14). The shell is quite rough and shows evidence of living in a harsh habitat. It is about 17.6mm in length and 19.2mm wide. I have not yet been able to identify this small lake dweller.

My lake experience was the end of my Tibet trip and I headed back to China. While no one would call Tibet a sheller's paradise, it was certainly an interesting place to visit.

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**Linnaean Trivia Quiz (answers on page 35)**

1. Linnaeus named only two mollusk species from the eastern Pacific. Can you name them?

2. There are three towns in the U.S. named Linne or Linneus. Can you tell which states?

3. Although he named many plant genera for friends and colleagues, Linnaeus, rarely used possessives for species names. In fact, he named only one mollusk species for a real contemporary person (as opposed to "auris Midae" or "magus," a magician). Can you name it?

4. What U.S. college campus has a life-size statue of Linnaeus on its campus?

5. Linnaeus's son, also Carl, followed in his father's footsteps as a botanist, naming many species of plant, but only one animal. Can you name it? (Hint: it's not a mollusk.)

6. Although Linnaeus gave names to many species of mollusk, I have found only two species that were named *for* him. Can you name them?

7. Linnaeus's Latin left a bit to be desired, as did his English. At least one mollusk has a misspelled trivial name, relative to the English etymology. Can you name it?

## *Neptunea* Award

It is time again for the Neptunea Award nominations. The Neptunea Award was conceived as an idea to thank those who have given much to the hobby of conchology without asking for recognition or a pat on the back. This is our way of recognizing those people. If you look at the list of previous winners you will understand a little better and see how much these people have contributed to our hobby, our science, and making things a little better for everyone.

**Previous winners**

**2000** Ross Gunderson, Ben and Josy Wiener, Debbie Wills
**2001** Emilio Garcia, Harry Lee, Lynn Scheu
**2002** Richard Petit, Bernie and Phyllis Pipher
**2003** Jim and Linda Brunner, Kevin Lamprell, Doris Underwood
**2004** Bobbi Houchin
**2005** Richard Forbush, Anne Joffe, William Lyons
**2006** Betty Lipe, Jack Lightbourne
**2007** No one elected due to unforeseen circumstances but we have three nominees carried over for **2008**

The process for the Neptunea Award is simple. Any member of COA can submit a nomination. The nominating person must include as much information as necessary on why his or her nominee deserves to win this award. While the nominator needs to be a member of COA, the nominee does not.

Once the list of nominees is compiled, it goes to our COA President who then distributes it to our board of directors. Each board member can vote for up to three people. After the vote the President compiles the results and at the COA banquet the winner or winners are announced. As it stands it is pretty straightforward.

There are many unsung heroes in our midst, so feel free to nominate someone who you feel deserves this award. No member of the board of directors may be nominated, so please, although many on the board may deserve the award, save the effort until they are no longer on the board.

As you can see by our list of previous winners, most have gone about the business of being helpful to our hobby in many ways. There are many in COA deserving of this award.

So if you know of a conchological hero or heroine, please fill out this form (page 14) and send it to me. You may e-mail it but **PLEASE DO NOT** put it on Conch-L.

Thank you,

Carole Marshall, 932 Cochran Drive, Lake Worth, Fl. 33461
phone 561-582-2148.
e-mail Marshalldg@aol.com

Please use this form if you would like to nominate someone for the Neptunea Award

# The Neptunea Award

*The Neptunea Award was established in order to recognize outstanding and distinguished service to conchologists and malacologists. This award is given to up to 3 awardees for:*

1. *Service to the organization, Conchologists of America*
   *OR*
2. *Service to the scientific interests of Conchologists of America*
   *OR*
3. *Service to the science of Malacology as it applies to conchologists*

Nominations are due by March 15, 2008. The board will choose the recipient(s) from the nominations. Nominees are not limited to COA members, but current COA board members are not eligible.

Name of nominee:______________________________________________

This person deserves this award because: (Please write a detailed paragraph describing why this person deserves this award.)

________________________________________________________________

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Mail before March 15, 2008 to:
Carole Marshall
932 Cochran Drive
Lake Worth, Fl. 33461

phone 561-582-2148.
e-mail Marshalldg@aol.com

# 2008 SHELL SHOWS & RELATED EVENTS

**(Jan. – Jul.) - Information is subject to change, please verify with individual organizations.**

Jan. 19-20 2008 **SPACE COAST SEASHELL FESTIVAL**, Melbourne, FL
The Melbourne Auditorium, 625 E. Hibiscus Blvd.
Jim & Bobbi Cordy, 385 Needle Blvd.
Merritt Is., FL 32953 (321) 452-5736
E-mail: corshell@earthlink.net

Feb. 1 – 3 2008 **BROWARD SHELL SHOW**, Pompano Beach, FL
Pompano Beach Recreation Center, NE 18th Av. & NE 6th St.
Linda Sunderland, 3970 NW 39th Street
Sunrise, FL 33351 (954) 749-9858
E-mail: klshells@mindspring.com

Feb. 15-17 2008 **SARASOTA SHELL SHOW**, Sarasota, FL
Sarasota Municipal Auditorium, Tamiami Trail
Fran Schlusemann, 11328 Rivers Bluff Circle
Bradenton, FL 34202 (941) 739-0908
E-mail: hanksfran@aol.com

Feb. 23-24 2008 **ST. PETERSBURG SHELL SHOW**, Seminole, FL
Seminole Recreation Center, 9100 113th St. N.
Bob & Betty Lipe, 348 Corey Avenue
St. Pete Beach, FL 33706 (727) 391-2197; FAX: 360-3668
E-mail: blipe@tampabay.rr.com.
Exhibit form: http://web.tampabay.rr.com/shellclub

Mar. 6 - 8 2008 **SANIBEL SHELL SHOW**, Sanibel, FL
Sanibel Community Center, Periwinkle Way
Anne Joffe, 1163 Kittiwake Circle
Sanibel, FL 33957-3605 (239) 472-3151
E-mail: sanibelchiton@aol.com

Mar. 7 – 9 2008 **7th AUSTRALIAN NATIONAL SHELL SHOW**, Brisbane, Australia
Italo-Australia Center, 23 Foster Street, New Market, Qeensland
Malacological Society of Austroasia, Queensland Branch
P.O. Box 15064, City East, Qld. 4002, Australia
Sally Johnsen, 61 (7) 3357-6651
E-mail: msaqld@powerup.com.au

Mar. 15-16 2008 **XXème RECONTRES INTERNATIONALES DU COQUILLAGE,** Paris, France
Bourse de Commerce, 2 rue des Viarmes, 75004 Paris, France
M. & D. Wantiez, 88, Rue du General Leclerc
95210 Saint Gratien, France 33 (1) 34-17-00-39
E-mail: wantiez.mada@wanadoo.fr

Mar. 13-15 2008 **MARCO ISLAND SHELL CLUB SHOW XXV**, Marco Is., FL
Marco Presbyterian Church, Elkcam Circle
Linda Scheckley, 348 Colonial Avenue
Marco Island, FL 34145 (239) 394-5416

April 26 2008 **BRITISH SHELL COLLECTOR'S CLUB CONVENTION,** Essex, England
Theydon Bois Community Centre, Essex
Tom Walker, 38 Redlands Road
Reading, Berkshire RG1 5HD, England
44 (118) 987-4294
E-mail: tom@tmwalker.co.uk

May 10-11 2008 **XVIII BELGIUM INTERNATIONAL SHELL SHOW**, Antwerp, Belgium
Schijnpoort, Schijnpoort Straat
Charles Krijnen, Burgemeester Jansenstraat 10
NL-5037 NC Tilburg, The Netherlands
31 (13) 463 0607
E-mail: bvc.shellshow@planet.nl
Web site: www.bvc-gloriamaris.be/beurs_e.htm

Jun. 14-15 2008 **JACKSONVILLE SHELL SHOW,** Jacksonville, FL
Morocco Shrine Temple, 3800 St. Johns Bluff Road
Judy Blocker, 2109 Beach Avenue
Atlantic Beach, FL32233-5932 (904) 246-4012

Jun. 29-Jul. 3 2008 **AMERICAN MALACOLOGICAL SOCIETY ANNUAL MEETING**, Carbondale, IL
Southern Illinois University, Carbondale, Illinois
Dr. Frank E. Anderson, Department of Zoology
Southern Illinois University, Carbondale, IL 62901
E-mail: feander@siu.edu (618) 453-4136

Jul. 6 - 10 2008 **CONCHOLOGISTS OF AMERICA ANNUAL CONVENTION,** San Antonio, Texas
Crowne Plaza Riverwalk Hotel, 111 Pecan Street E.
Wanda Coker, 332 Banyan Street, Lake Jackson, TX 77566 (979) 297-0852
E-mail: shellman7000@sbglobal.net
Web site: www.conchologistsofamerica.org

Jul. 12-13 2008 **KEPPEL BAY SHELL SHOW,** Yeppoon, Queensland, Australia
Yeppoon Town Hall, Jean M. Offord, 277
McDougall St., N. Rockhampton, Qld. 4701, Australia (7) 4928-3509

Jul. 19-20 2008 **TOWNSVILLE SHELL SHOW**, Townsville, Queensland, Australia
Cutharinga Bowls Club on Harold Street, West End
Glenda Rowse, 19 Farrell Street
Kirwan 4814, Queensland, Australia (7) 4773-2817

DONALD DAN, COA Award Chairman
6704 Overlook Drive, Ft. Myers, FL 33919 U.S.A.
Tel. Voice & Fax (239) 481-6704
E-mail: donaldan@aol.com

# Longest Lived Mollusk

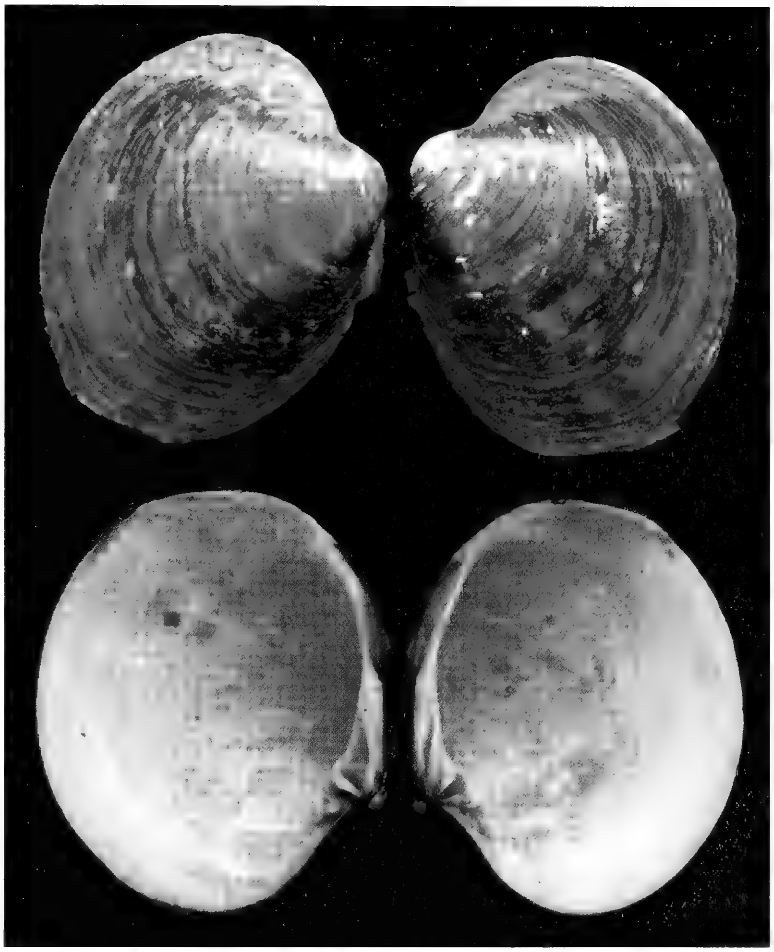
## by Thomas Eichhorst

*Arctica islandica* (Linnaeus, 1767), also called the ocean quahog, is not one of the more glamorous shells that might be found in a conchologist's collection, but it does have one unique feature. It is the longest-lived mollusk known. This is really not a big news flash to many conchologists and malacologists, as this species as been known as extraordinarily long-lived for quite some time. *Arctica islandica* was known to regularly exceed 150 years of age and had been recorded to achieve 220 years (Jones, 1983). The news flash is a new report that lists the age of this lowly clam at 405 to 410 years!

As reported by Ian Sample in the *Guardian Unlimited* (29 Oct 2007), a team of researchers from The School of Ocean Sciences at Bangor University in Wales, U.K., was dredging the North Iceland Shelf as part of a climatological study. In dredge material from 80 meters depth they found specimens of *Arctica islandica*. Unlike tropical bivalves, the bivalve mollusks found in cold northern waters, "…contain a record of their ontology in the form of internal annual growth lines…which can be observed microscopically…" (Scourse, et al. 2006). In other words, researchers can cut thin sections of the shell and "read" the growth lines much like the similar process used with tree rings, called dendrochronology. When this was accomplished with the clam specimens dredged from the Iceland Shelf, they found ages from 405 to 410 years. This marine process is called sclerochronology.

The importance of this is not to establish a longevity record, although this does break the previous official Guinness record of 220 years for an *Arctica* clam as well as a record of 374 years established the previous year (Schöne, et al., 2005). The importance of these long-lived clams is that they can help researchers study the earth's climate history. Tree rings from both fossil specimens and long-lived living specimens like the bristlecone pine have long been used in this manner, but there has until now not been a similar readable record from the marine environment. In 2006 this research team established the beginnings of such a process by using fossil *Arctica islandica* shells that provide a record from 1,000AD to 1400AD. These readings may now be extended by the new finds from 1600AD to the present. This is obviously just a beginning, but scientists now have the start of a marine chronological record that can be added to climate data history and hopefully expand our knowledge of the planet upon which we live.

In closing it should be noted that the report of this long-lived clam included speculation that there may be specimens still on the ocean floor that live to a ripe old age of 600. While this seems like quite a lot of years for an animal to live – it is; the report called *Arctica islandica* the oldest animal – it is not. As pointed out on Conch-L by Dr. Peter Wirtz from Madeira, Portugal, that distinction goes to species of deep sea *Gerardia* (encrusting anemones that build a supporting skeleton) that have been estimated at ages of over 2500 years. The skeleton of this animal can also be sectioned and the growth lines read.



***Arctica islandica* (Linnaeus, 1767), 80mm, from 20 to 30 feet deep, rocky bottom, in Ledbetter's Narrows, North Haven, Maine. Image by Joel Wooster, courtesy of the Jacksonville Shell Club at: www.jaxshells.org.**

**References:**

**Jones, D.S. 1983**. Sclerochronology: reading the record of the molluscan shell, American Scientist, 71, p. 384-391.

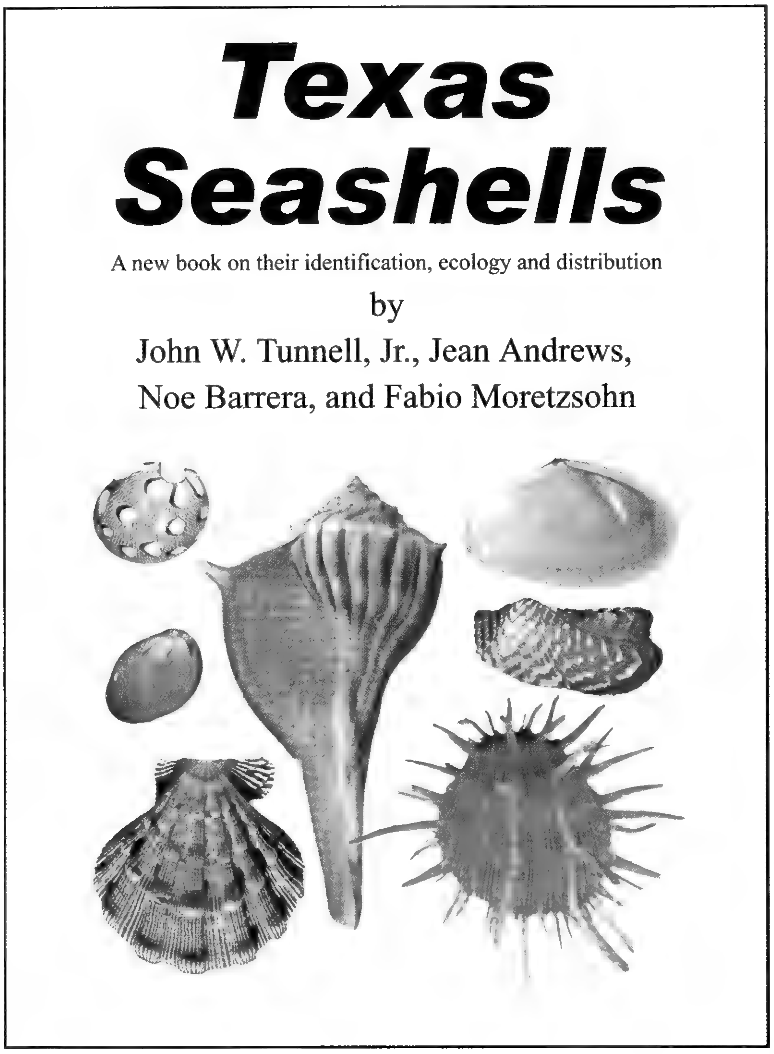
**Sample, Ian. 2007**. Clam claims oldest animal record, Guardian Unlimited, accessed on line at: http://www.guardian.co.uk/science/2007/oct/29/clam

**Schöne, Bernd R.; Fiebig, Jens; Pfeiffer, Miriam; Gleâ, Renald; Hickson, Jonathan; Johnson, Andrew L.A.; Dreyer, Wolfgang; Oschmann, Wolfgang. 2005.** Climate records from a bivalved Methuselah (*Arctica islandica*, Mollusca; Iceland), Palaeogeography, Palaeoclimatology, Palaeoecology; 228, pp. 130-148.

**Scourse, James; Richardson, Chris; Forsythe, Graham; Harris, Ian; Heinemeier, Jan; Fraser, Nicole; Briffa, Keith; & Jones, Phil. 2006**. First cross-matched floating chronology from the marine fossil record: data from growth lines of the long-lived bivalve mollusk *Arctica islandica*, The Holocene, 16,7 (2006) pp. 967-974.

**Wirtz P. & Debelius H. 2003**. Mediterranean and Atlantic Invertebrate Guide, Conchbooks, 305 pp.

# A New Book: Texas Seashells




Jean Andrews published two books & two field guides on Texas seashells between 1971and 1992. Her clear black and white photographs & adjacent species descriptions contributed to their great success and usefulness to a wide audience of shell collectors, students, natural resource managers, and scientists. In collaboration with John Tunnel, Noe Barrera, and Fabio Moretzsohn, another book will be published in color in late 2008. It will expand identification from 325 to 900 species, including those in deepwater; update scientific names, habitat, distribution, and ecology; and include a checklist of all known area species. Of course, many species overlap with those found elsewhere in the Gulf of Mexico.

## The Authors:

**John W. Tunnell, Jr**., Ph.D. - Professor of Biology, Director of Center for Coastal Studies (CCS), and Associate Director, Harte Research Institute (HRI) for Gulf of Mexico Studies, Texas A&M University-Corpus Christi (TAMUCC). He has studied molluscs of Texas and the Gulf of Mexico for over 40 years.

**Jean Andrews**, Ph.D. - Author of numerous books on seashells, peppers, and other topics.

**Noe Barrera** - Malacologist, microphotographer and book designer at CCS/TAMUCC.

**Fabio Moretzsohn**, Ph.D. - Malacologist and research associate with experience in Pacific and Gulf of Mexico molluscs at HRI/TAMUCC.

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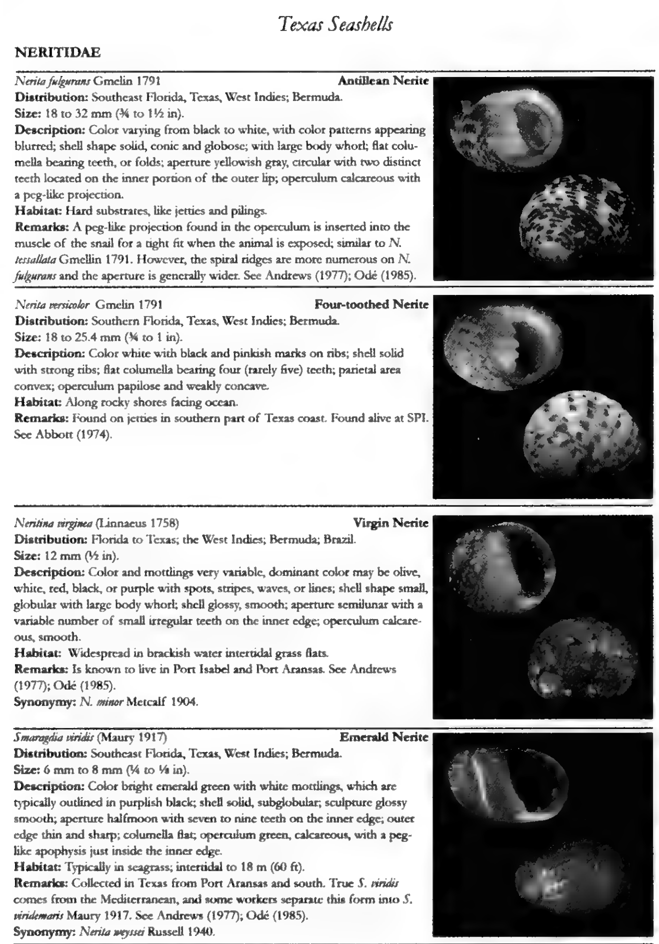
*Texas Seashells*

**NERITIDAE**

*Nerita fulgurans* Gmelin 1791 **Antillean Nerite**
**Distribution:** Southeast Florida, Texas, West Indies; Bermuda.
**Size:** 18 to 32 mm (¾ to 1½ in).
**Description:** Color varying from black to white, with color patterns appearing blurred; shell shape solid, conic and globose; with large body whorl; flat columella bearing teeth, or folds; aperture yellowish gray, circular with two distinct teeth located on the inner portion of the outer lip; operculum calcareous with a peg-like projection.
**Habitat:** Hard substrates, like jetties and pilings.
**Remarks:** A peg-like projection found in the operculum is inserted into the muscle of the snail for a tight fit when the animal is exposed; similar to *N. tessallata* Gmellin 1791. However, the spiral ridges are more numerous on *N. fulgurans* and the aperture is generally wider. See Andrews (1977); Odé (1985).

*Nerita versicolor* Gmelin 1791 **Four-toothed Nerite**
**Distribution:** Southern Florida, Texas, West Indies; Bermuda.
**Size:** 18 to 25.4 mm (¾ to 1 in).
**Description:** Color white with black and pinkish marks on ribs; shell solid with strong ribs; flat columella bearing four (rarely five) teeth; parietal area convex; operculum papilose and weakly concave.
**Habitat:** Along rocky shores facing ocean.
**Remarks:** Found on jetties in southern part of Texas coast. Found alive at SPI. See Abbott (1974).

*Neritina virginea* (Linnaeus 1758) **Virgin Nerite**
**Distribution:** Florida to Texas; the West Indies; Bermuda; Brazil.
**Size:** 12 mm (½ in).
**Description:** Color and mottlings very variable, dominant color may be olive, white, red, black, or purple with spots, stripes, waves, or lines; shell shape small, globular with large body whorl; shell glossy, smooth; aperture semilunar with a variable number of small irregular teeth on the inner edge; operculum calcareous, smooth.
**Habitat:** Widespread in brackish water intertidal grass flats.
**Remarks:** Is known to live in Port Isabel and Port Aransas. See Andrews (1977); Odé (1985).
**Synonymy:** *N. minor* Metcalf 1904.

*Smaragdia viridis* (Maury 1917) **Emerald Nerite**
**Distribution:** Southeast Florida, Texas, West Indies; Bermuda.
**Size:** 6 mm to 8 mm (¼ to ⅓ in).
**Description:** Color bright emerald green with white mottlings, which are typically outlined in purplish black; shell solid, subglobular; sculpture glossy smooth; aperture halfmoon with seven to nine teeth on the inner edge; outer edge thin and sharp; columella flat; operculum green, calcareous, with a peg-like apophysis just inside the inner edge.
**Habitat:** Typically in seagrass; intertidal to 18 m (60 ft).
**Remarks:** Collected in Texas from Port Aransas and south. True *S. viridis* comes from the Mediterranean, and some workers separate this form into *S. viridemaris* Maury 1917. See Andrews (1977); Odé (1985).
**Synonymy:** *Nerita weyssei* Russell 1940.

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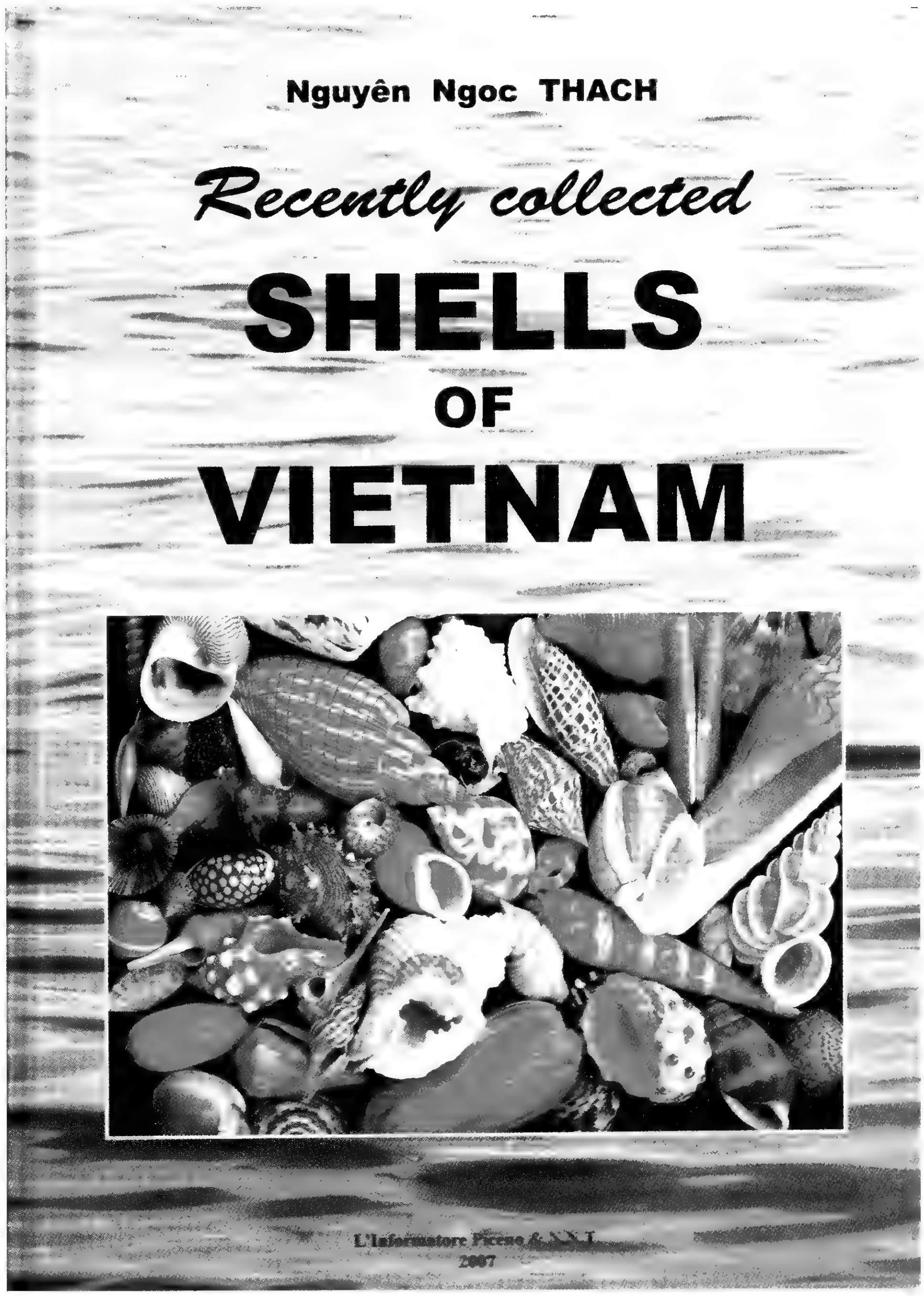
# Book Review: Recently Collected Shells of Vietnam

**by Nguyen Ngoc Thach 2007,**
**L'Informatore Piceno, Ancona, Italy,**
**118 colored plates, 384 pages, price: Euro 80**

This beautifully illustrated book deals with shells collected by Dr. Thach and the members of his family during the last five years. Vietnam has over 3000km of coastline along the South China Sea and the summer and winter tropical monsoons cause the marine currents to flow in reverse directions, thus alternately bringing in species of mollusks from both north and south, assuring an abundance of shells. Doubtless many of the most beautiful and fascinating species of the Indo-Pacific Ocean are found along the shores of Vietnam.




The book commences with illustrations of a few live mollusks, two score of opercula, some new species, and sinistral and hybrid shells collected by the author. These hybrids are of particular interest, especially *Melo melo* x *Cymbiola nobilis,* which if confirmed, may prove to be a very interesting hybrid as it involves two different genera. The first section also lists the systematic arrangement followed in the text and a detailed description of each of the recently collected species. It includes scientific names, Vietnamese and English names, average size, habitat, distribution, and occurrence. All in all, Dr. Thach provides a thorough listing for each of over a thousand species of marine shells that he deals with, including a sprinkling of exotic terrestrial shells.

The second section consists of two parts: Part I has fine colored plates showing all the species described in the text; Part II shows species with abnormalities and assorted patterns, colors, shapes, and sizes. This can certainly help to identify some of the common abnormalities found in the different species as well as the wide variety of colors, patterns, and irregular shapes prevalent in some of the species found in these waters.

Dr. Thach is an oceanographer and has been a shell collector for over 30 years, in the course of which he has accumulated more than 3000 different species of mollusks. He is also the author of a book titled "Shells of Vietnam," published in 2005 with 1500 species. It would be safe to say the he has been and continues to be a major contributor to our knowledge of Vietnamese seashells. All those interested in shells of the China Sea and Indo-Pacific will benefit by including this book in their library.

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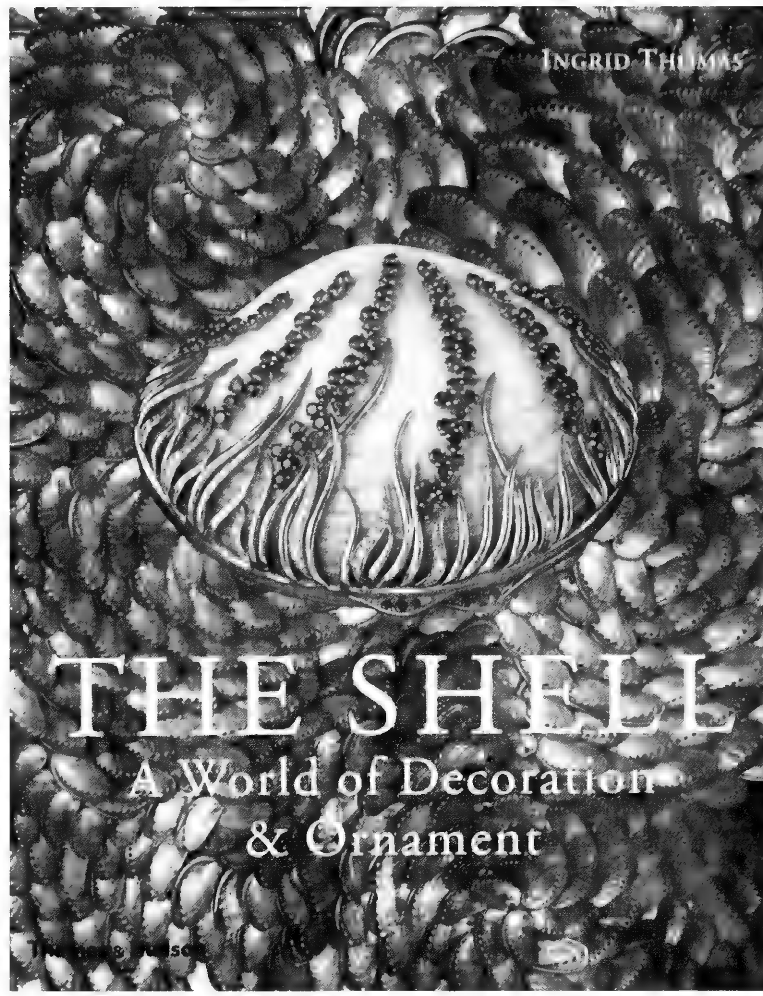
# Book Review:
# THE SHELL: A World of Decoration & Ornament

**By Ingrid Thomas**

**2007, Hardback, 12½ x 9¾ inches (binding), Thames & Hudson, London, 256 pages, ISBN 978-0-500-51357-6, $65.00**




*"I've got a new madness! I'm running wild for shells. The beauty of shells is as infinite as flowers."* With this breathless quotation, taken from a letter written by Mary Delany, the 18th-century socialite and shell artist, Ingrid Thomas opens a showcase chapter, 'Ornamental Shellwork,' in her elegant, compelling, and many-faceted book. Although shell collectors will find much in "The Shell" to interest them, this is not simply a book for shell collectors. Ably supported by a sympathetic publishing team, Ingrid has endeavoured to describe and illustrate many of the uses we have made of shells in different parts of the world. That the ways we have used them over the centuries has greatly enriched our lives is immediately obvious from the 526, mostly coloured and wonderfully diverse illustrations.

Ingrid does not ignore the natural history of the shell world, but her emphasis is on the relationship of shells to humans. She shows how they have been used to symbolise status: a pre-Columbian bag and pillow made from beads fashioned from the Pacific spiny oyster, *Spondylus princeps*; the scallop shell motif on British coats of arms; and from India the multi-purpose Indian chank shell, *Turbinella pyrum*. The art of shell carving is explored: delicately incised nautilus cups, an Aztec sacrificial knife inlaid with tiny pieces of shell, and shell cameos displaying historic personages or mythological scenes. Shell jewelry is given special attention: the elaborately decorated shell of the dog conch, *Strombus canarium*, fashioned from rutilated quartz by Seaman Schepps; a bracelet of diamond-encrusted, stylized shells, set in gold and platinum, by the influential designer Jean Schlumberger; a "lace-pin" brooch, by Tiffany & Co., formed of an Australian brooch clam, *Neotrigonia margaritacea*, a pearl nestling in each open valve; and a disc-shaped Fijian chest ornament made from the black-lipped pearl oyster, *Pinctada margaritifera*.

As may be expected, a lengthy chapter is devoted to shells in art (although, apparently because of copyright difficulties, such luminaries of the art world as Georgia O'Keefe, Raoul Dufy, William Ensor, and Pablo Picasso, each of whom portrayed shells in his or her work, are conspicuously absent): Alessandro Allori's luscious *Pearl Fishers*; Sandro Botticelli's iconic *Birth of Venus*; Rembrandt van Rijn's etching of *The Shell* (showing an inadvertently reversed marble cone, *Conus marmoreus*); John Ruskin's exquisite *Paper Nautilus*; and *Two Shells*, an arresting photo by the American photographer Edward Henry Weston.

The chapter on ornamental shellwork is full of mirrors, chandeliers, collages, and sailors' valentines. Most of the examples are from British sources and include a few choice examples, but it is a pity that none of the superb exhibits regularly displayed at American shell fairs, the Sanibel fair in particular, finds a place here. The chapter on shells in architecture is among Ingrid's best, shell grottoes deservedly receiving special attention: the Shell House at Goodwood House, West Sussex, England; the vaulted room, Le Nymphée, Domaine du Piédefer, Viry-Chatillon, France; and a mussel-encrusted shell room in a private house in Mustique, by Blott Kerr-Wilson.

There is more, much more, in this lovely book, but if you cannot afford to buy a copy, then beg, borrow, or steal one to enjoy all of it. Revel in its visual beauties, but do not ignore the text, for Ingrid Thomas has a way with words that makes it as much a joy to read as it is to ogle. If the impressionable Mary Delany had been able to see this book perhaps she would have written, of the authoress, *"I have some exciting news. I hear there is a bright new star in the conchological firmament!"*

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# Book Review: The Recent Molluscan Fauna of Île Clipperton (Tropical Eastern Pacific)

**by Kirstie L. Kaiser**

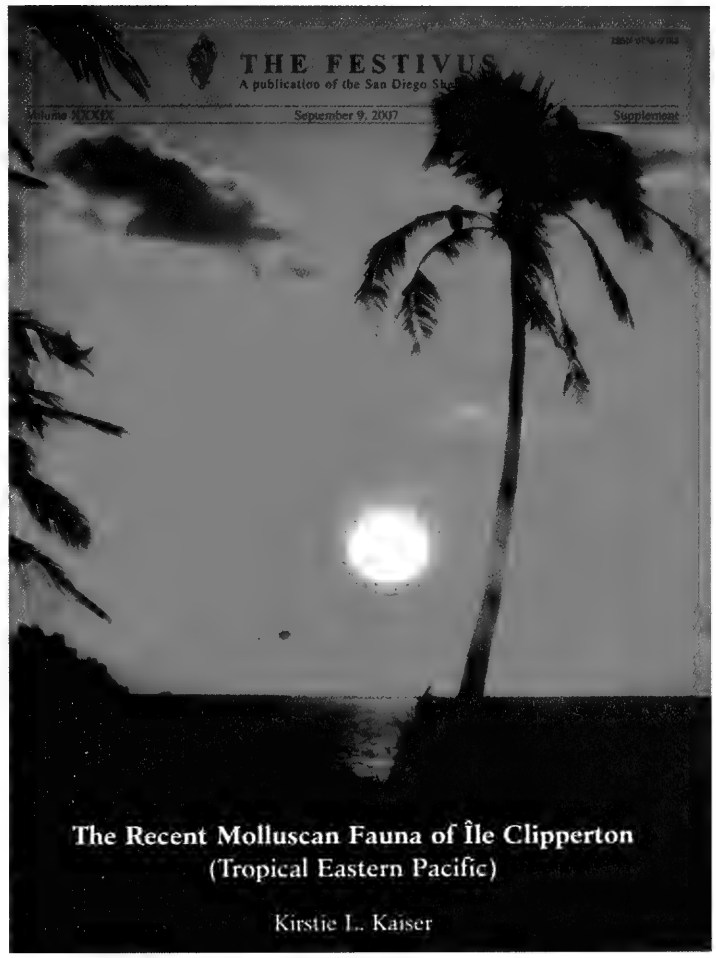
**2007, The Festivus 39 (Supplement): 1-162, 26 text figures, pls 1-43**

Among the most remote islands in the world, Clipperton Island (officially Île Clipperton, a French possession) has long been of interest to biogeographers, as it is situated in an overlap zone of the Pacific Ocean, being influenced by forces from both the Indo-Pacific and the tropical eastern Pacific (TEP). A "near" coral atoll, less that 12km in circumference, defined by a large enclosed lagoon and a volcanic outcrop (Clipperton Rock), it is the westernmost of the five TEP island groups, which also include Islas Revillagigedo, Isla del Coco, Isla de Malpelo and Islas Galapagos. Discovered in 1527, Clipperton has, with a few notorious exceptions, remained uninhabited, being visited by fishermen and the occasional scientific expedition. It is not an easy place to access, being surrounded by an unbroken fringing coral reef and a ring of continuous surf. Landings and departures by small boats can be truly hazardous. Once you are ashore it is a true desert island, with little shade, no fresh water, and a horde of voracious bright orange land crabs.

The molluscan fauna of Clipperton has been sampled intermittently for the past century and by 1994 there were 92 species known to occur in island waters. During that year the first comprehensive survey was undertaken to sample all the shallow marine habitats. Organized by Kirstie L. Kaiser and John D. Jackson, the 1994 expedition logged more than 160 hours of SCUBA diving for mollusks. In 1998, 2005 and 2007 Ms. Kaiser returned to Clipperton for additional collecting, accompanying American, French, and Mexican expeditions. The results of her work over the past 13 years have now been published in a stunning Supplement to Volume 39 (2007) of *The Festivus*, which lists and figures a total of 285 species, of which 182 are reported herein for the first time.

The work consists of an illustrated narrative section, describing the physical and hydrographic environment and the collecting history of Clipperton. Four appendices follow, the first of which is a detailed compilation of species, arranged systematically, with annotated citations, dates of collection, and the deposition of the specimen of record. The second appendix is a checklist of rejected records, with remarks; the third is an important analysis of the species listed according to their zoogeographic affinities, showing the distribution of taxa between seven possible sources, ranging from circumtropical species to local endemics. The fourth appendix is a record of expedition participants between 1994-2007.

There are 43 photographic plates that illustrate the species listed in Appendix I. These figures are a combination of light photographs and scanning electron micrographs, with detailed views also included. Plates 42-43 are color records of opisthobranchs and chitons. All the figures are of very good quality. Even though many of the smaller taxa are not identified to species, they have been defined consistently and vouchered for future reference as needed.




The Recent Molluscan Fauna of Île Clipperton is the third in a series of surveys on TEP islands authored by Kirstie Kaiser and published by the San Diego Shell Club. Her other works include surveys of the Galapagos (1997) and Isla de Malpelo (2001, with Clayton Bryce). Of these three, the present work is the most ambitious, scholarly and opulent, reflecting the improvement in desktop printing technology and, more importantly, the author's continued development as a field collector and malacologist. Highly recommended.

Ordering information: \$40 postpaid domestic; \$45 (Canada and Mexico) airmail postpaid; and \$50 overseas airmail postpaid. Orders are by letter or e-mail, sent to the San Diego Shell Club, c/o Carole Hertz, 3883 Mt. Blackburn Ave., San Diego, CA 92111, USA or <jhertz@san.rr.com>. No credit card sales.

Henry W. Chaney
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# "See Y'all There" San Antonio, Texas, COA 2008
# July 5-10, 2008

**Plan now for the best tasting COA yet in Alamo River City USA! Put a star on your calendar for landing in the heart of Texas where you will find our hearts are as big as Texas. Come see for yourself.**

**Texas Shellers Unite to plan for COA 2008**

Arrive early and observe Independence Day on the 4th of July with a picnic and fireworks. Field trips are planned for July 5th, opening ceremonies July 6th, followed by a variety of informative and entertaining programs. We will celebrate your arrival at the nearby Buckhorn and Ranger Museum. When the week has ended, our special Farewell Fiesta at the hotel will send you safely home, till we meet again.

Traditional auctions will tempt you to seriously compete with your friends to own a special shelly item or shell specimen! The anticipation of seeing the array of goodies is almost as fun, but not quite as exciting as winning the bid! Check your shell inventory and decide now what you really need for your collection or what just calls out to you. Also, if you have duplicates, your donations will be happily accepted. Dave and Lucille Green will be our knowledgeable and charming hosts at a Texas style afternoon Oral Auction.

Numerous Silent Auctions will keep you on your toes. You are sure to find some great items while having a good time as well. Bring an extra bag to take your treasures home. There will also be a Bargain Table for your pleasure.

We have 13,000 sq ft for the Bourse. Participants will be able to rest, take time for decisions, snack from the food cart, and view a spectacular array of specimen shells while relaxing in the lounge.

Start planning for the Lone Star State Sea Star Show. More information will be at *COA2008.org* and in the next issue. There will be a special Texas Shell Exhibit and the long-awaited "Texas Seashells" book featuring approximately 900 species found in Gulf of Mexico and Caribbean Sea will be introduced (see announcement on page 22).

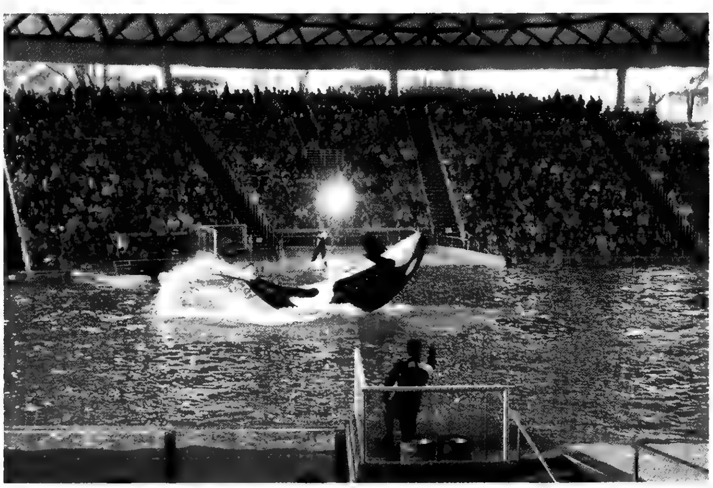
San Antonio is a unique city. It is the 7th largest city in the nation, but with a small town atmosphere. You will enjoy this retreat from your everyday schedule by relaxing in the lovely Crown Plaza hotel and at the pool area overlooking the city, or strolling the Riverwalk and sampling historic city sites (trolleys and river taxis will get you there quickly).

**Watch for updates and registration forms at: *COA2008.org***

## Tentative Field Trips

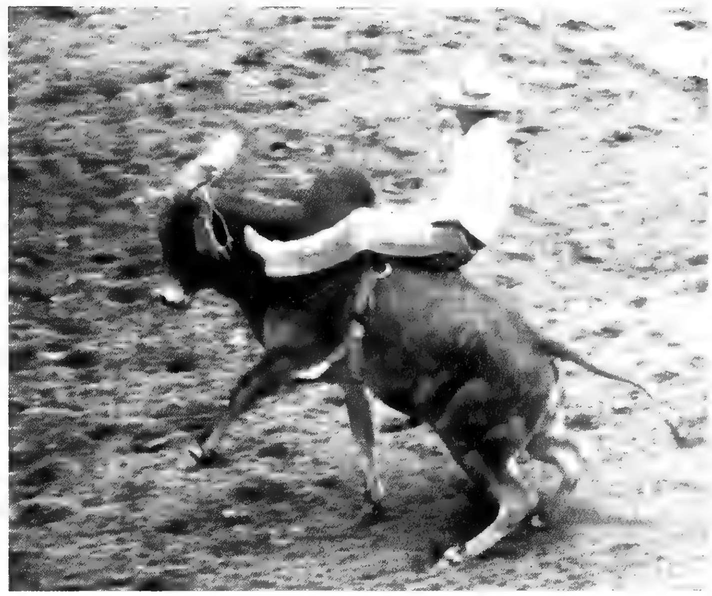
**Corpus Christi/Port Aransas** (all day): It's a 2½ hour drive to Corpus. Explore the water front, visit the University of Texas Marine Research Center, the USS Lexington and the Texas State Aquarium.

**Port Aransas** (all day): Dive among the unique marine life making their homes around oil rig pilings in the Gulf of Mexico.



**Sea World** (all day): Visit with the penguins, dolphins, seals, sea lions & Shamu. A behind-the-scenes tour offers a glance at the scientific support for this most famous park. The adventurous can cool-out on water rides and be thrilled on roller coasters.

**Fiesta Six Flags** (the evening of July 4th): Ride the train. Explore the historic sections and catch 50s, western, and traditional Mexican shows. Picnic at the pavilion and end the day with spectacular laser–lights & fireworks show.



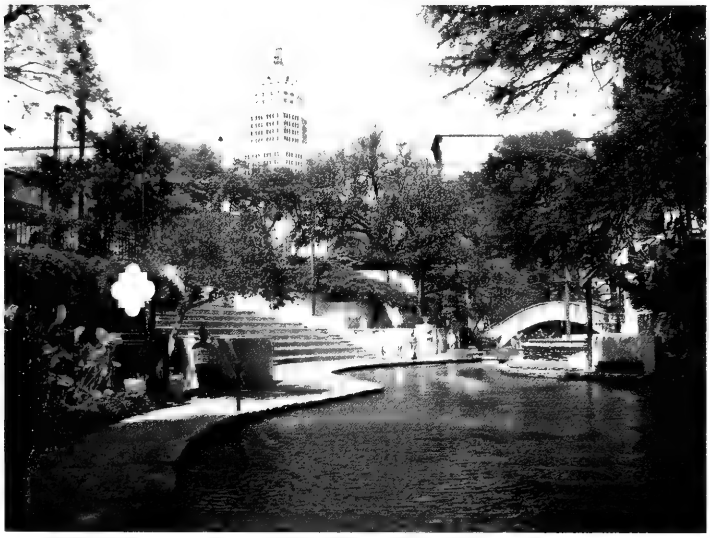
**Charreada & Mexican Dinner** (half day): A ranch dedicated to preserving history and traditional Mexican cowboy culture. We will eat a Mexican dinner & attend a Mexican rodeo.

**San Antonio Zoo (**half-day): See the largest US collection of birds and watch various animal antics. While you dine on BBQ, the zoo's aquarium director will tell about it's leadership in growing coral for other US aquariums.

**Bats, BBQ & Exotics** (half-day): Tour an exotic animal ranch and enjoy BBQ while watching the sun set. Then marvel at millions of bats departing their natural cave home in search of dinner (the largest US bat colony – preview at batcon.org).

**The Missions** (half-day): Five Spanish missions were built along the San Antonio River in the early eighteenth century. You'll see four of them. Then dine at the revolving restaurant atop the Tower of the Americas, watching the sunset, the stars, and city lights.

**McNay Art Museum and Botanical Gardens** (half day): McNay concentrates on 19th and 20th Century American and European art & hosts amazing permanent and traveling collections. The gardens connect people to the plant world.



**City Tour** (half-day): Get a taste of San Antonio. We're the seventh largest US city, but keep our small town culture. We cherish our unique architecture and know you will too.

**Fossil Collecting** (half day): Most of Texas was once a part of the sea. Marine fossils are prevalent.

**Texas Hill Country** (all day): Drive through the hill country to Fredericksburg, settled by nineteenth century German immigrants. Visit the Nimitz Museum of the Pacific War, followed by shopping & lunch. Then browse the largest US Wild Seed Farm and the Lyndon B. Johnson ranch.

**Dining *on* the San Antonio River** (evening): Cruise & dine on a riverboat, drifting lazily along the San Antonio River. Then stroll on your own and enjoy the world-famous Riverwalk (offered two evenings).

**On your own and within walking distance:** The Alamo, Alamo Star Walking Tour, El Mercado (Mexican market), Hemisfair Park, The Aztec Theater, Institute of Texas Cultures, Southwest Center for Arts & Crafts, and much more.

## Crowne Plaza Hotel

Virtual Tour: www.CrownPlaza.com
Reservations: In January by phone (800) 496-7621 or online
Easy access, shuttle service.


**Be an important part of the 2008 COA Convention!**

- **Register early to assure choice of rooms and field trips. Advance reservations on line in January.**
- **Donate your tax deductible shell items to the Auctions – Proceeds support grants and research.**
- **Cash Contributions are appreciated and will help with purchasing awards and other necessities.**

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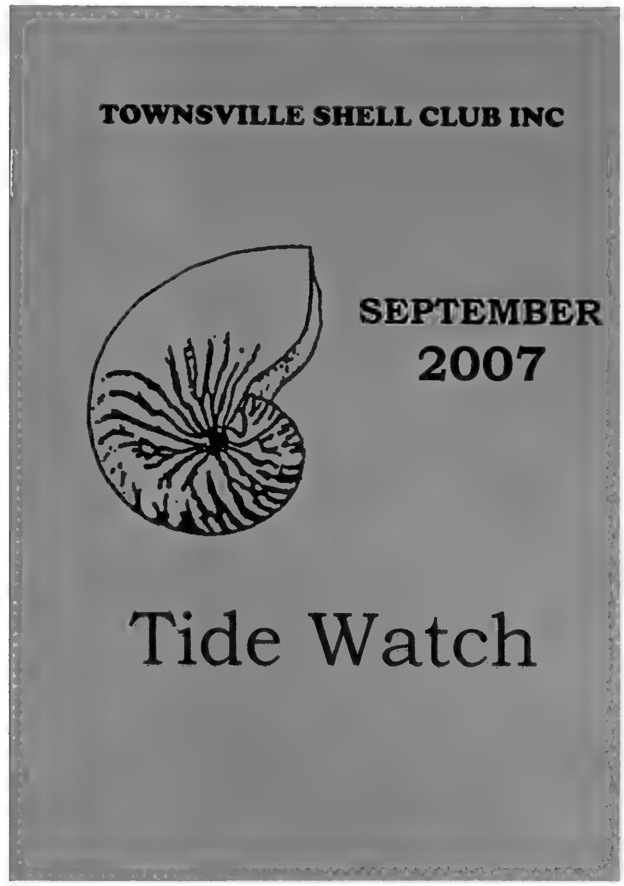
**If you didn't get a free CD of COA 2008, don't fret. We have one reserved in your name, telling you more about our town & our plans for your arrival.**

**- Email Publicity Committee, bob@bobnixon.com with your address. We'll get it to you right away.**

**- No email? Send a post card or note to Bob at 914 Arizona Ash St. San Antonio, TX 78232**

**- If you'd like to view the slide show now, go to COA2008.org and click on COA 2008 slide show. Be patient, it takes a little while to load. You won't be disappointed.**




The following was reported by Paul Southgate in the September 2007 *Tide Watch*, the Townsville Shell Club Inc. newsletter from Townsville, Australia. Their summer shell show was well attended, in part because of an article in the local paper about a $30,000+ shell that would be on display. This was the beautiful *Zoila mariellae* Raybaudi, 1983 (think white *Zoila*). This rare cowrie has only been found in deep water off the north coast of Western Australia. It seems that all known specimens were trawled by Taiwanese fishermen in the 1970s and the exact locality remains unknown. The area is now off limits to legal fishing by the Taiwanese and despite various rumors, additional specimens have yet to be found. This species is similar to and could be mistaken for a pale form of *Zoila friendii friendii* (Gray, 1831) or *Zoila friendii thersites* (Gaskoin, 1849) called variously species, subspecies, form *contraria*, *vercoi*, or *candida*.

At their recent annual shell show, one of the entrants, Mike Roberts, had a display in the Educational Division of self-collected fossils from Flinders Island (a small island between Tasmania and Australia). Apparently, someone attending the show thought Mike's fossils were poor quality seashells. This someone purchased shells from one of the dealers at the show and quietly left them on Mike's display with a "sympathetic note and best wishes for an improvement in the quality of his entries next year."

Tom Eichhorst
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# *Conus kalafuti* Da Motta 1987

## By Ted Kalafut

Back in the early 1980s I experienced a personal heyday (to put it mildly) of diving and shell collecting off Roatan Island, Honduras. Roatan Island presented a beautiful and new world to me and I had no idea what to expect, either on land or in the water. I enthusiastically dove the reefs and inshore waters at every opportunity. I was elated every time I found a shell I could not identify. My intuition proved right in almost every case, as there proved to be a lot of unnamed species in the area. I could hardly wait to finish breakfast and get out to the reef in the morning and it was with great reluctance that I left the water at the end of the day. I would spend two to six weeks on the island whenever I could financially swing it.

One of my finds while diving was a small cone shell I knew was undescribed. I contacted Bob Da Motta by mail and we worked together for a few years to get this new species on the books. Finally in 1987, Bob published the description of *Conus kalafuti*. This species seems to be restricted to a couple of small pockets along the miles of reef that my friend Tyll Sass and I combed over for a number of years.

*Conus kalafuti* was only found alive in one small area. Dead or empty finds were further ranging and were occasionally found in 40 feet of water in sand along the outer edges of the reef system off the western end of the island. The living shells were always found in a dense dark green mat of algae or "seaweed" on top of rocks well off the sandy bottom along the lower third of the reef in about 35 feet of water. They were not often found, but when you did find one it was easy to see, even at a distance, as the most common color of the shell is yellow and this proves a stark contrast with the dark green algae. Once a specimen was spotted I could work the immediate area (the algae mat on the rock) with my face only inches away from the algae as I hunted for less conspicuous color forms. I have not been free diving or SCUBA diving for a great many years, but I am still "playing" with a wealth of photos from those good old days.

**This is a typically colored specimen photographed in a make-shift aquarium. Size is 14mm.**

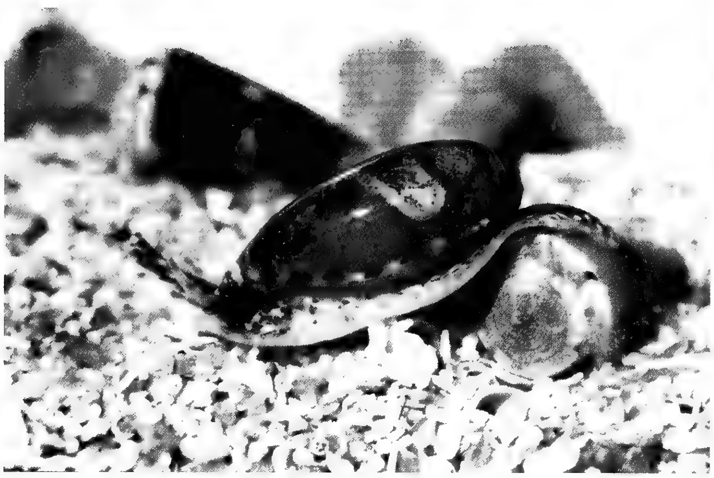
***Conus kalafuti* is apparently endemic to Roatan Island, in the Bay of Islands of Honduras.**

**These two brightly colored specimens are perhaps the most colorful *Conus kalafuti* I found. The most common color form is yellow-orange, with other colors, such as shown here, more rarely encountered. Actual size is 10-14mm.**

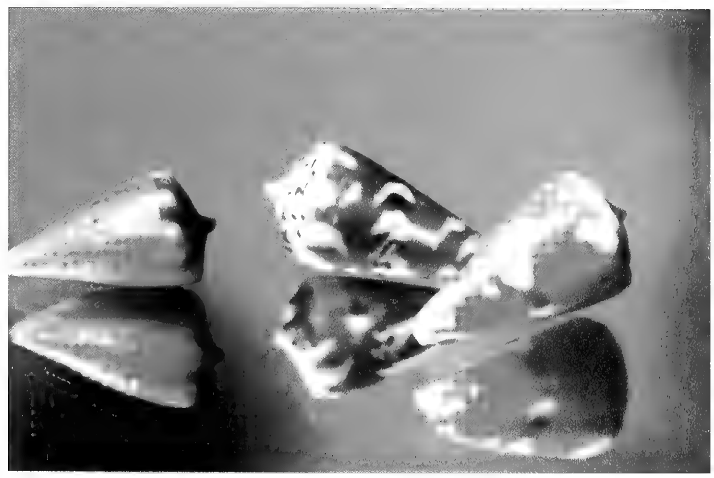
***Conus kalafuti* photographed soon after being collected. They were almost immediately active when placed in the aquarium. Size is approximately 10-15mm.**

Some lighter colored specimens of *Conus kalafuti*.

A specimen with an unusual stepped spire.

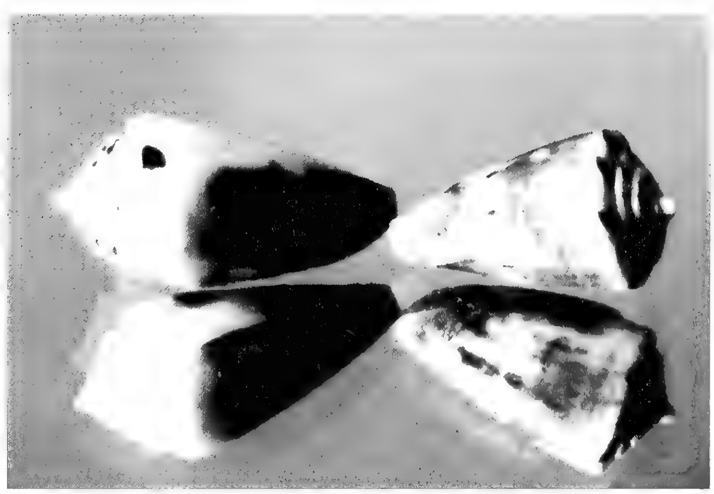


A small *Conus kalafuti* with what appears to be the marginellid *Hyalina pallida* (Linnaeus, 1758) crawling across the cone on its way to more important affairs.



A good color variation shot with two *Conus kalafuti* and what looks like a *Conus kulkulkan* Petuch 1980.

*Conus magnottei* Petuch 1987, 12-14mm, another Roatan Island endemic. This species is found in shallow water of about six feet and were all dead finds. I have never found a live specimen. They are certainly similar in appearance to the deeper water *Conus kalafuti*, but I leave it to the readers to compare images and make their own determination.



Two more specimens of *C. magnottei*, size approximately 10-14mm. They were collected in course sand and reef rubble in a wave-protected area near the St. Anthony's Key Hotel and Resort, a few mile east of West End, Roatan Island.

Ted Kalafut: kalafut88@hotmail.com

# Shelling at an Abalone Farm

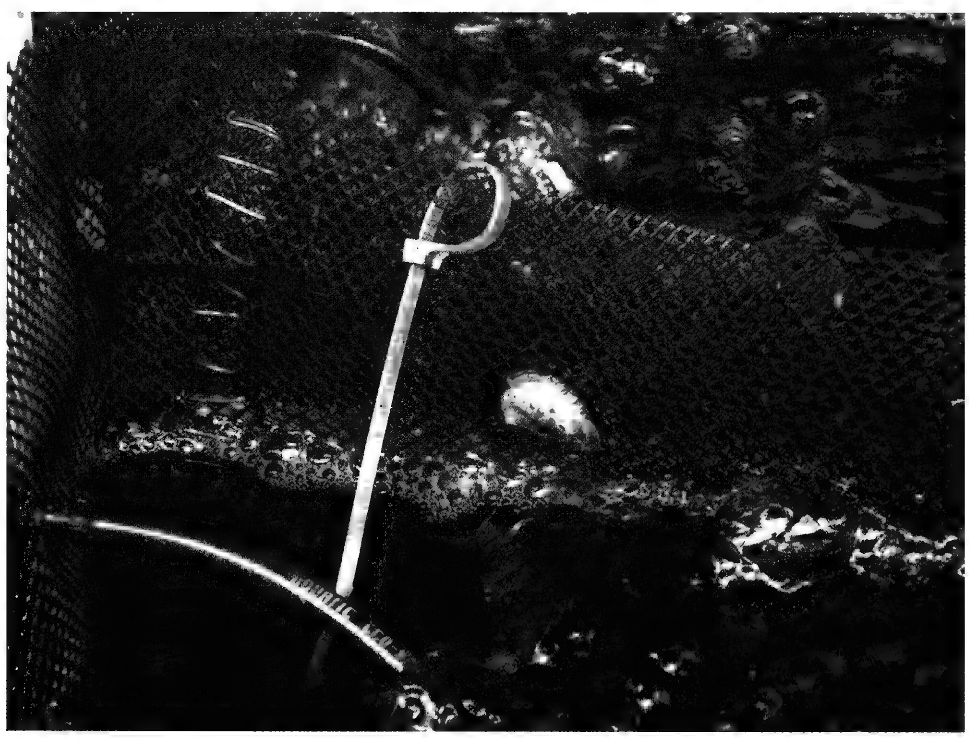
By Peggy Williams

Visiting my son in California, I of course wanted to see what could be found on the beach. We took a trip from Oakland to Monterey, to see the aquarium and spent the night on the coast in Davenport. The low tide was, as expected, at dawn (I'm not good with dawn, but I pull myself out of bed for shelling!). After a short time on the beach (where we found a few bivalves), the tide started coming up and we drove back towards the inn to pick up my son, who had slept in. The previous day I had noted a sign that said there were abalone for sale at Davenport Landing, so we stopped to check it out.

Surfers were lining the road on that Saturday morning, but they didn't get in our way as we went a little off-road to a parking lot at the abalone farm. We walked to the building and found a couple just beginning to set out abalone jewelry for sale. There were also some *Haliotis rufescens* shells for sale that had been cleaned to sell the meat, and the man had three large *Haliotis* that he had collected (SCUBA) in years past. I bought the shells and as we talked I noticed a top shell in the dirt nearby. It was *Calliostoma canaliculatum*. After a bit we returned to the car and I looked around the farm. It consisted of open vats filled with kelp that was being washed with seawater brought up from the nearby ocean. I saw only one small abalone on the kelp and no other shells in the water, but began noticing shells on the ground that had either been discarded when the abalone were harvested or escaped from the vats. These shells must have come in as juveniles either on the kelp or in the water. I ended up with some very nice specimens of ten species - a good haul!

**Species list:**
*Haliotis rufescens* Swainson 1822
*Acmaea strigatella* (Carpenter 1864)
*Acmaea conus* Test 1945
*Acmaea testudinalis scutum* Rathke 1833
*Calliostoma canaliculatum* Lightfoot 1786
*Calliostoma ligatum* (Gould 1849)
*Tegula brunnea* Philippi 1848
*Tegula funebralis* (A Adams 1855)
*Tegula montereyi* (Kiener 1850)
*Crepidula convexa* Say 1822

**(Above): The vats of growing kelp are constantly flushed with fresh sea water. The kelp is replaced regularly as the abalone eat their way through this fast growing algae. (Below): A small *Haliotis* clinging to the netting above the water and kelp.**



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# A Shell from Mars

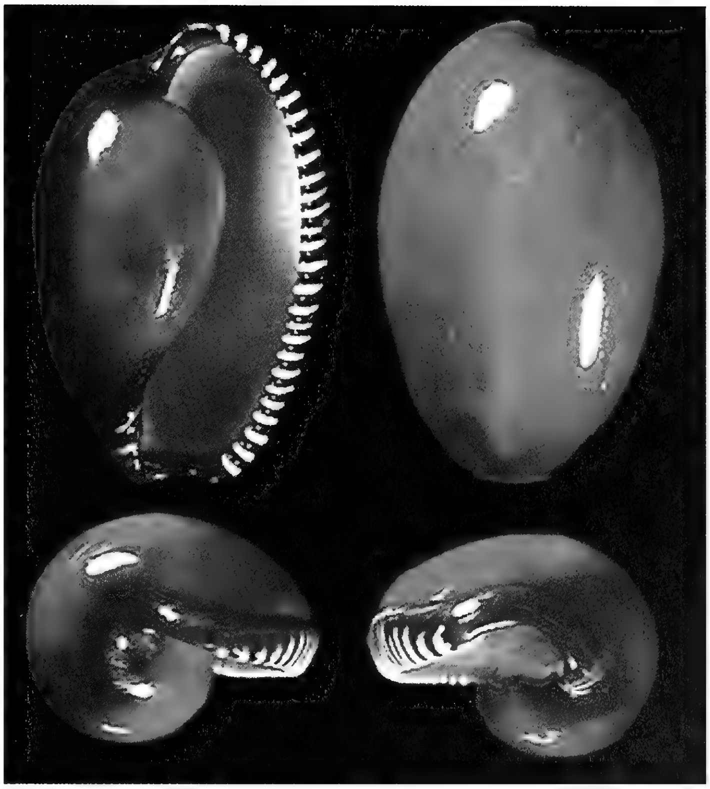
## by S. Peter Dance

"It was like a shell from Mars," he said. "A shell dreams are made of, a shell beyond imagining. I could not believe my eyes, it was so extraordinary. It made my heart beat faster." It was July 2005 and I was with friends in a shell store on Sanibel Island, listening to Bruno Briano, a diver and shell dealer from Savona on the Italian Riviera. He was describing his reaction to a couple of strange-looking shells he had received from a Somalian fisherman in 1993. For me it was a novel aspect of a story I was anxious to piece together from various sources. It was an aspect perhaps only Bruno could tell convincingly. The story began with a Russian trawler, operating somewhere near the coast of Somalia, plucking a few of these shells off the sea bed at a depth of about 100 metres. Bruno acquired a couple of them. He soon realised that they were potentially of scientific interest and had obvious commercial value. He did not foresee the impact they were to have on his life.

Looking like a hybrid between a true cowry (family Cypraeidae) and an egg cowry (family Ovulidae), each shell was highly polished, brownish black on the outside, yellowish orange internally, with the apertural lip displaying a row of gleaming white "teeth." Unlike any species known to be living today, it was concluded later that the shells belonged to a group of molluscs that were thought to have become extinct some 40 million years ago. Donald Dan, a dealer who has handled most of the few known specimens, tells me that their discovery may be the most exciting conchological event of the past hundred years. In his opinion there may be no more than half a dozen specimens in collections worldwide. A possible seventh, trawled in the same area as those Bruno acquired, was hurled back into the sea after an ownership dispute!

Bruno did not know how to classify the new find correctly. It did not help that some influential conchologists refused to believe the shells were real. Frustrated, he decided to publish a description of it and give it a name. A distinctive species deserves a distinctive name, so when he published his illustrated description in 1993, he christened it *Chimaeria incomparabilis*. For some, the generic name *Chimaeria* could be interpreted as a chimera, a fabled monster made up of parts belonging to different creatures. A Frenchman, on the other hand, may interpret it differently. For him a chimera could be a herald of death or some other unpleasant event, so the name could mean "an incomparably bad thing." The specific epithet *incomparabilis* implied that there was no other species to which it could be compared. Bruno presented one of his two specimens, the holotype, to the National Museum of Natural History in Paris. The other he kept, seldom allowing it to leave his person.

Sometimes referred to as the "Black Shell," it really does seem to have a dark side, as this story of one of the other specimens obtained by the Russian trawler amply demonstrates. In 1997 the theft of a remarkable and excessively rare seashell was reported on both sides of the Atlantic. A Florida shell dealer had come across it while appraising a valuable shell collection for the American Museum of Natural History in New York. One report described it as a "little oval shell, 2½ inches tall, about an inch wide, and colored dark brown, gray and white." (*Times Union*, Jacksonville, 30



***Chimaeria incomparabilis*** **Briano, 1993, 55mm+, from deep waters off the coast of Somalia. With characters from both Cypraeidae and Ovulidae, it has tentatively been placed in the family Cypraeidae, subfamily Cypraeovulinae. Eventual examination of soft body parts and radular characteristics will do much to settle the lineage of this unusual species. Image courtesy of Guido Poppe from his web site at: http://www.conchology.be.**

January 1997) Another said it was "...an extremely rare seashell, one of only six on the face of the globe." (*Miami Herald*, 30 January 1997) Each report carried a photo of the shell, showing an apertural view. Finding the shell irresistible, the dealer had pocketed it. Shortly afterwards he advertised it for sale in a specialist magazine and on the Internet, thus precipitating a chain of events unique in the annals of conchology.

Now the story moves to Belgium. It is August 1998 and I am in Brussels, visiting Guido Poppe, a well-known and respected shell dealer. He tells me the story of his involvement with the stolen shell. Having studied the advertisements closely and realising this is no ordinary shell, he contacts the Florida shell dealer and agrees to buy it for $12,000. Guido is unaware that he is about to receive stolen property. The shell arrives and becomes a conchological marvel in Brussels overnight, collectors travelling long distances merely to look at it. Guido offers it to an Indonesian shell collector in Jakarta, who agrees to purchase it for $20,000. Meanwhile, in Florida, the dealer is arrested for having committed

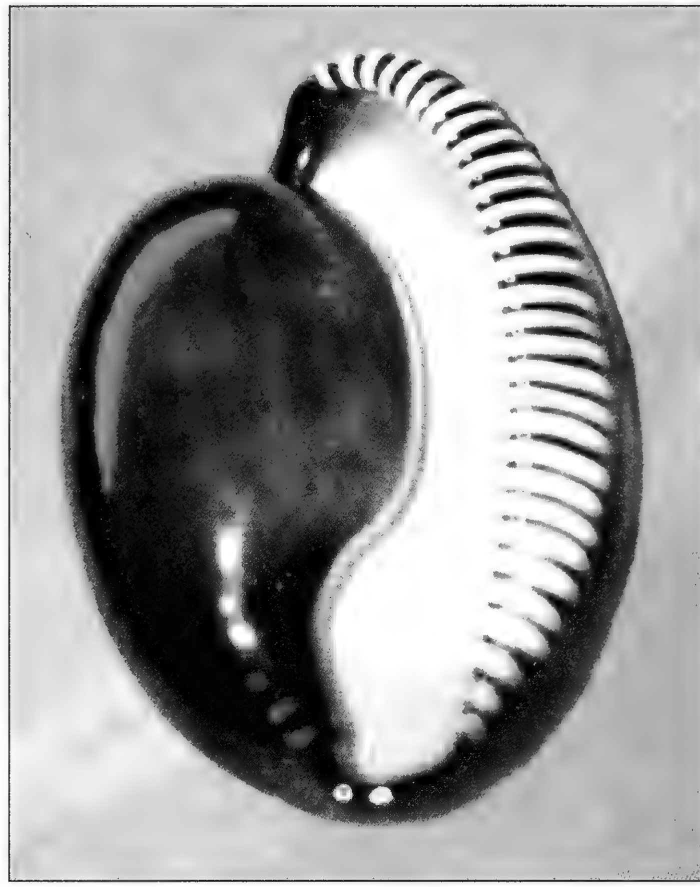
a federal offence. He contemplates a spell in prison and a substantial fine. Later, while collecting shells in the Caribbean, Guido learns, from his wife, that a private investigator has phoned, wanting to talk to her husband. Passing through Los Angeles soon afterwards, he is detained for questioning by US authorities, but is released without charge. Back in Belgium, by now fully aware of the shell's recent history, he takes steps to recover it and safeguard his good name.

Eventually, the Indonesian collector, suitably reimbursed, relinquishes the shell and it regains its rightful place in the American Museum of Natural History. Early in 1998, however, his communication-cable business, recently moved to an impressive new building, is destroyed during riots in Jakarta. Bruno, the original describer of the species, has never handled the stolen specimen, but he, too, is made to suffer. Most of his extensive stock of specimen shells is stolen during a popular shell exhibition in Italy. Soon afterwards burglars break into his property and steal much of his remaining stock. As if these disasters were not enough, a mountain stream above his house then bursts its banks, destroys his car and buries thousands of shells and fossils in mud! Bruno's young son, certain the specimen retained by his father is the cause of all this mayhem, urges him to sell it. Accepting that it has now become a liability, Bruno sells the shell to a Japanese collector. Shortly afterwards a severe earthquake strikes Kobe, with disastrous results for the collector's family!

Each of the principal players in this unhappy saga, therefore, has paid dearly for having become obsessed, if only briefly, with *Chimaeria incomparabilis*. Understandably, perhaps, none of them has been willing to record his thoughts about this unlucky shell in print. Guido was concerned that this "most exciting conchological event" could go unrecorded and may even be forgotten. He had also noticed my positive interest in his revelations about it when I was with him in Brussels. It came as no surprise to me, therefore, when he suggested to me that I might like to set down the facts in print. He handed over to me a dossier of notes he had compiled, but was unlikely to publish, and gave me the original label that had accompanied the stolen shell when he purchased it.

I agreed to tell the remarkable story of *Chimaeria incomparabilis* because none of the key players who had given me first-hand information was prepared to tell it. Unfortunately, I have been frustrated in my search for a top-quality photo of the stolen shell, the most notorious of the few known examples. Even the best efforts of Paula Mikkelsen, the curator of molluscs at the American Museum of Natural History at the time of the theft, were unavailing. Equally, despite some promises, I have been unable to obtain top-quality photos of any other specimen.

One of the accompanying photos is courtesy of Guido Poppe from his web site at: http://www.conchology.be. Unfortunately the photo is no longer available as he was forced to take down his posting of thousands of mollusc images due to improper use and postings on other web pages without permission. [Editor's note: Guido Poppe has always granted this magazine permission to use his photographs, the people who improperly and unlawfully copied images from his web site need only have asked.] The second photo is from Yves Teryn, a Belgian shell enthusiast from Gent. In 1993, as an 18-year-old visitor to a prestigious shell show at Lutry, in Switzerland, he took a photo of a specimen of *Chimaeria incomparabilis* displayed by Bruno Briano and kindly sent it to me. Clearly, the photo was not taken under studio conditions, but



**Photo, by Yves Teryn, of the example of *Chimaeria incomparabilis* exhibited by Bruno Briano at the Shell Show held in Lutry, Switzerland, in 1993.**

that does not matter. It is the spontaneous record, by a young man with a passion for conchology, of a fortuitous encounter with a remarkable shell. He was never involved with it directly, so his photo may also help to distance me from the baleful influence of an object I have never seen, much less handled. Sadly, I later learned that the day after he emailed the photo to me his computer crashed and he lost the image and five years of research notes! I guess the label Guido gave me is still a potential threat. I confess that I have been tempted to dispose of this seemingly trivial piece of paper because of its former association with the stolen shell. Thus far I have resisted the temptation, but I am keeping my options open. As the teller of this melancholy tale I can ill afford to take chances with a shell from Mars!

# *Umbraculum umbraculum* (Lightfoot, 1786)

## by Ted Kalafut

This is one shell I never thought I would stumble across, but that is exactly what happened in the early 1980s on Roatan Island, Honduras. On a dismal and dark morning following a night of strong thunderstorms, I took a walk to survey the wash-off from the surrounding hills and see what might be in the debris washed ashore. I figured I was wasting my time, but I had to wait for the tides to refresh what was at present, water with no visibility. I was walking west from my room at the Lost Paradise Hotel and paying attention to the flotsam on Tabiyana Beach at West Bay when I stopped and instinctively flipped over a large strange looking "sponge" with my toe. I didn't know they had the Atlantic umbrella slug here! And to think that I had been fairly depressed because the storm had made the water too murky for decent SCUBA diving. The shell on top of this large animal is 4 inches across! So far I had what was shaping up to be a fantastic day, and it was still early.

*Umbraculum umbraculum* (from the Latin *umbella*, a parasol used by Roman ladies for protection from the sun) is a sponge feeder that is generally considered to be an Indo-Pacific species, although as seen on the Roatan beach, it also occurs in the Caribbean and western Atlantic. It is an opisthobranch (the group that includes nudibranchs) in the order Notaspidea, family Umbraculidae. Even when feeding this strange creature does not elongate, but rather retains the circular bulbous shape seen here. Authorities differ on whether there is a single cosmopolitan species, or several species.

Ted Kalafut
kalafut88@hotmail.com

### Answers to the Linnaean Quiz on page 13.

1. *Conus princeps* Linnaeus 1758, and *Voluta* [now *Oliva*] *porphyria* Linnaeus 1758. Both were listed as "Habit. ..." in the Systema.

2. Linne in San Luis Obispo County, California; Linneus in Aroostook County, Maine; and Linneus in Linn County, Missouri, although the latter might not have been named for Carl. There are also a Linnean Hill in D.C.; a Linne Woods in Chicago, Illinois; (formerly) a Linneus Post Office in Lane County, Oregon; and a Linne Cemetery in Galveston County, Texas.

3. *Mactra spengleri* Linnaeus, 1767, for Lorenz Spengler (1720-1807), Keeper of the Royal Art Collection of Denmark and of a large collection of shells. *Helix Gualtierana*, now *Iberus gualtierana* (Linnaeus 1758), could also be considered in this category, and though Linnaeus drew heavily from the works of Niccolo Gualtieri (1688-1744), Blunt (2001) does not mention that the two ever met.

4. The Linne Monument was relocated from Linne Woods in Lincoln Park to the University of Chicago in 1976.

5. The human bot fly, *Dermatobia hominis* (L., Jr., 1781).

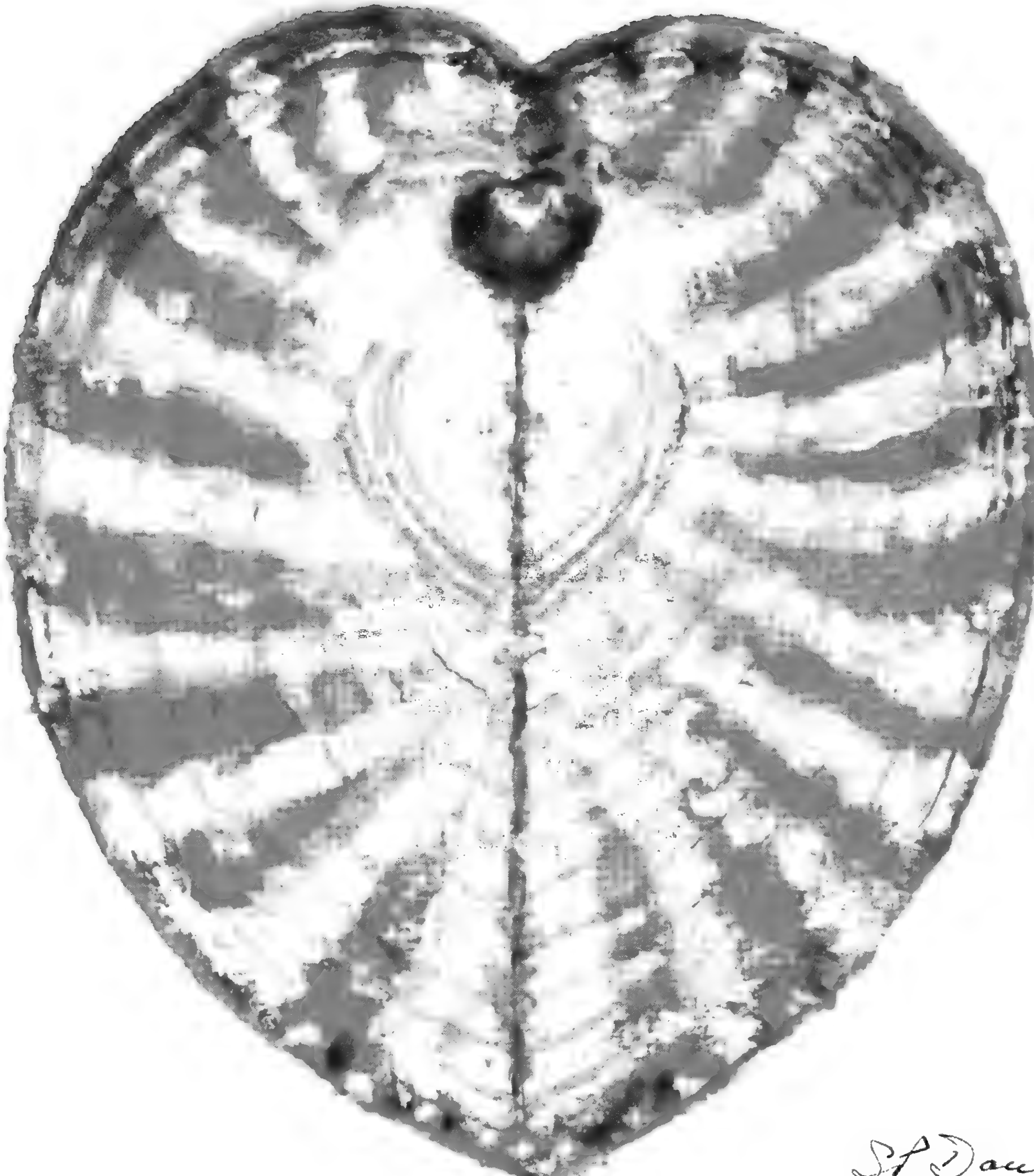
6. *Homalopoma linnei* (Dall 1889) and *Eunaticina linnaeana* (Récluz 1843). If you know of others, please let me know!

7. *Venus pensylvanica* Linnaeus 1758, now *Linga pensylvanica* (Linnaeus 1758). We know that this was not just an orthographic error, as there is also a bird, *Motacilla* [now *Dendroica*] *pensylvanica* Linnaeus 1766.

Bruce Neville
bneville@unm.edu

### In Memoriam:

**Karl-Heinz Beckmann**
**Janet Durand**
**Fred Leonard**
**Juan Jose Parodiz**
**Jim VunKannon**
**Ken Zentis**



S.P. Dance
August 2005

...36, No. 1, March 2008
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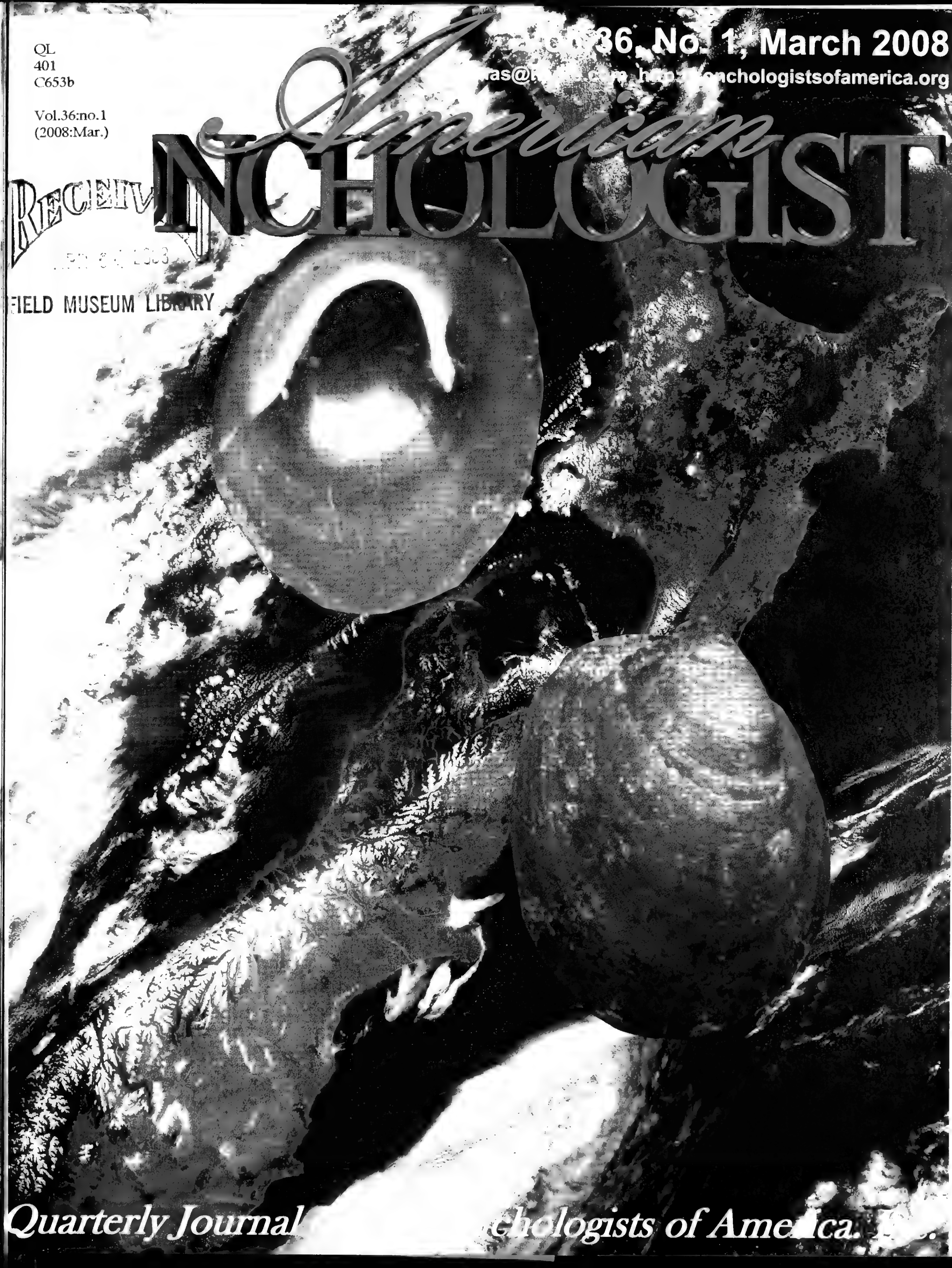
# American CONCHOLOGIST





Quarterly Journal ...chologists of Ame...ca...

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 36, No. 1 March 2008**


In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***

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**AMERICAN CONCHOLOGIST**

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**Front cover: The New Zealand endemic *Latia neritoides* Gray, 1850 (family Latiidae) superimposed over a NASA image of New Zealand from space. This small (7-11mm) freshwater snail is found under stones in streams on North Island. When disturbed, the snail emits a bright-green bioluminescent mucus cloud with a light similar to the light of a firefly. It is the only known freshwater animal capable of generating bioluminescent light and a full understanding of the mechanics of its bioluminescence and the purpose of this unique capability are as yet unknown.**

**Back cover: A life-sized mask created by COA member Arline Reiman (see page 31). The mask has a marine theme and features mermaids, coral, sea fans, and other sea life.**

**Editor's Notes:**

### Nominating Committee Report for 2008

**President: Alice Monroe** **Vice President: José Leal**
**Treasurer: Steven Coker** **Secretary: Bobbi Cordy**
**Trustee: Fabio Moretzsohn**

The election will be held during the business meeting at the annual convention in San Antonio. Thanks to the nominating committee members:



Chuck Owen, Chairman
Sue Hobbs
Joyce Mathys

### A Shell From Mars

It should come as no surprise that the article by Peter Dance in the last issue, "A Shell From Mars," caused a bit of a stir among our readers. Many readers lived through the events described and know the individuals involved; they seemed to appreciate that the story had finally been documented. Others did not know of this infamous shell and learned of its story for the first time. There was also a request for a full citation of this species. The shell from mars is: *Chimaeria incomparabilis* Briano, 1993, described in "World Shells," Vol. 5, pp. 14-17, type locality is Somalia. It was originally placed in the family Cypraeidae, but later determined to more properly belong in the fossil family Sphaerocypraeidae, thought extinct (until Briano's description) since the middle Miocene.

### Back Cover Notes

I failed to mention that the water color of *Corculum cardissa* (Linnaeus, 1758), the heart cockle, shown on the back cover of the December 2007 issue was painted by Peter Dance for COA member Rusti Stover. It was inscribed "To Rusti," and presently hangs in her home.

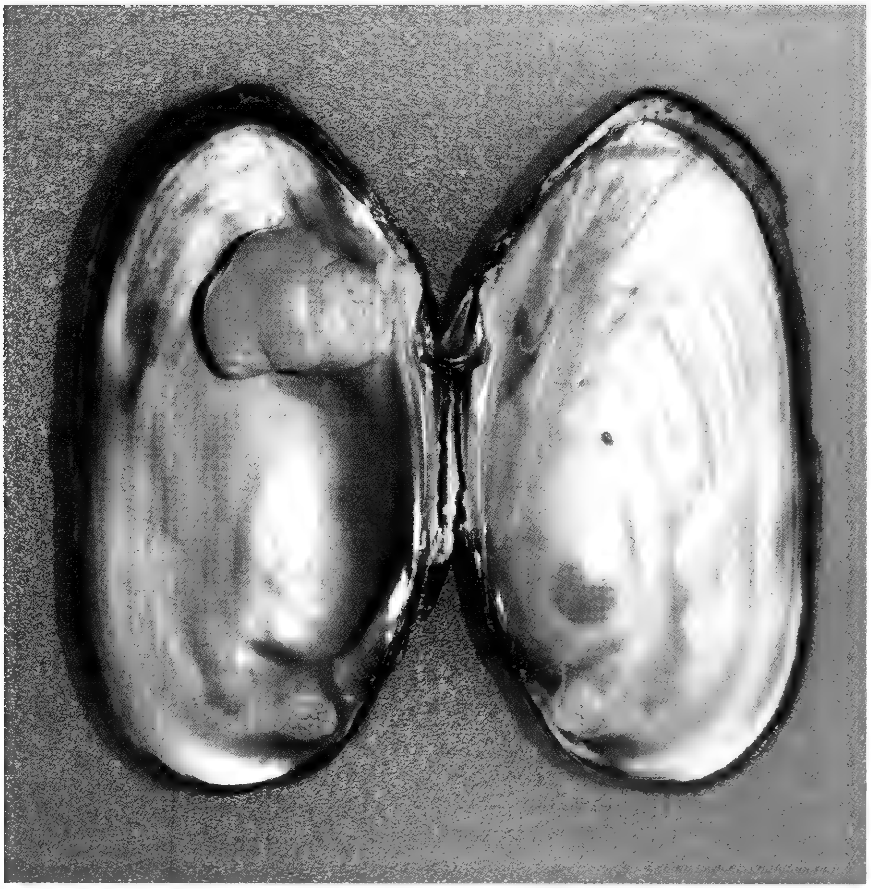
### Oops

Harry Lee pointed out an incorrect identification in the June 2007 issue. On the bottom of page four are a series of Colubrariidae used to illustrate an article on blood-sucking mollusks. Number four was identified as *C. obscura* (Reeve, 1844), but should have been labeled *C. testacea* (Mörch, 1852). Harry Lee states, "There is a lot of misinformation in circulation about this and related taxa." Abbott (1958, 1974) and many others mistakenly synonymize *C. testacea* (a West Atlantic species) with *C. obscura* (an Indo-West Pacific species), even though the two differ in several respects, including protoconch morphology. He went on to say that, "*C. testacea* is probably not found in the East Atlantic despite reports by Talavera (1982) and Vermeij and Rosenberg (1993). Those records are probably based on *Colubraria canariensis* Nordsieck and Talavera, 1979, which is quite close to, if not conspecific with, *C. obscura* (Reeve)."

# A Gigantic Blister Pearl in a Louisiana Pearlshell Mussel

by

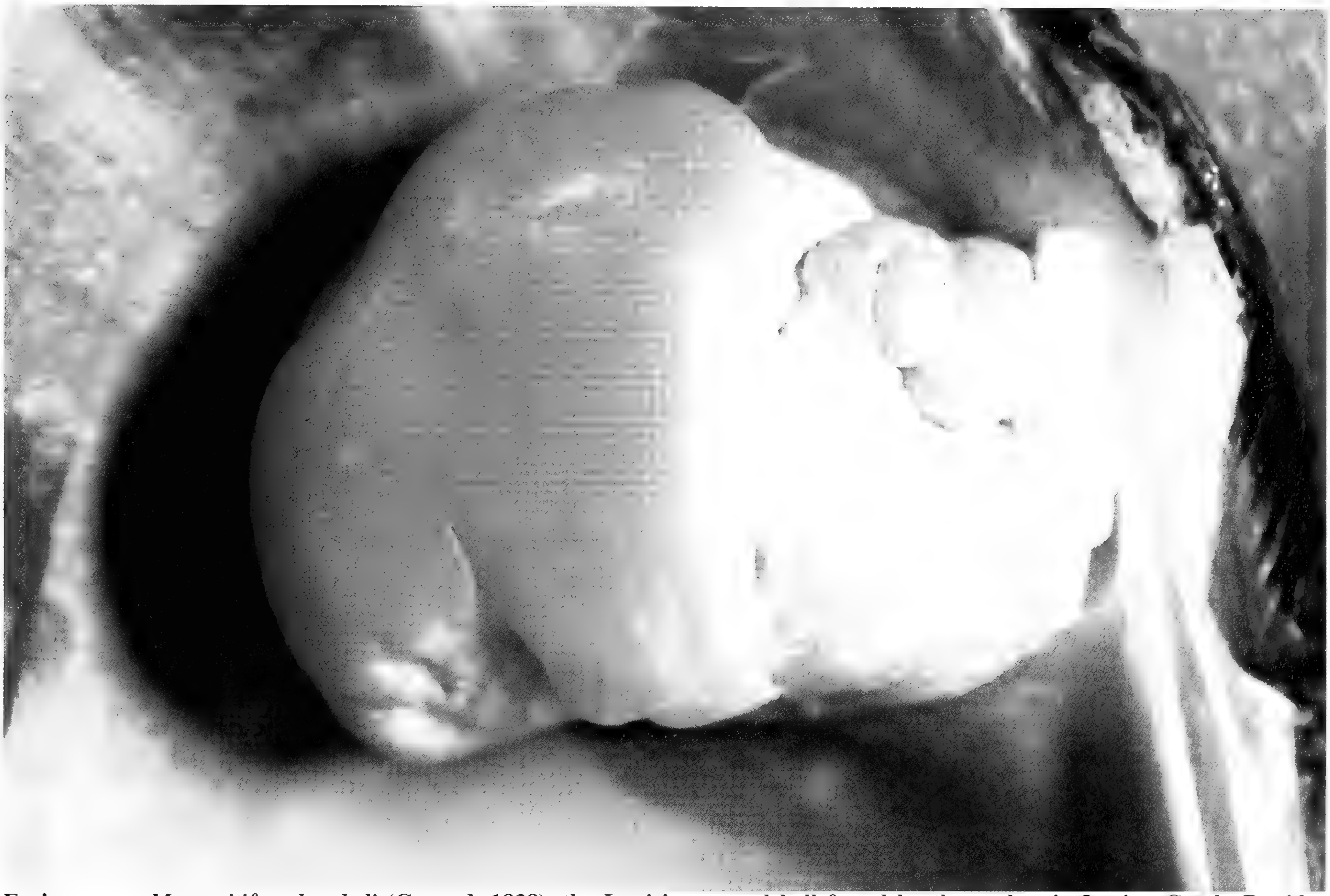
**Jerry G. Walls - Photographs by Maleta Walls**



In early November 2007, Steve Shively, Wildlife Biologist for Kisatchie National Forest in central Louisiana, and I were busy wading through cool central Louisiana streams looking for endemic crayfish to be filmed by the crew for a French natural history program. (How this came about is another story—suffice it to say that we were in the water for about 7 hours to get maybe 7 minutes of footage. Now I understand why 90-minute movies take months to film. It's all wait, wait, wait, and "Can we do that again?") Loving Creek, the stream picked for the filming, has a sandy silt bottom with gravel and cool (almost frigid that day) water. It certainly is not like what most people would think of finding in swampy Louisiana, but it's not atypical of central Louisiana pineland streams. Along with the crayfish, we noticed a large but expected population of the federally threatened Louisiana pearlshell mussel, *Margaritifera hembeli* (Conrad, 1838). This interesting bivalve is known today only from a few small streams in Rapides and Grant Parishes, central Louisiana, although it seems to have once ranged into southwestern Arkansas. Steve spent a considerable part of his working life surveying this mussel in local streams, so the whole thing was rather ho-hum to him.

Individuals are not allowed to legally collect or possess this protected mussel, but I couldn't help picking up a recently dead specimen lying at the edge of a large bed of living mussels. The valves still had bits of flesh adhering to them and the edges of the shells were intact, indicating the mussel couldn't have been dead for more than a few days. At least 17 strong seasonal growth rings were visible below the eroded umbos, so I assumed it was a fairly old specimen. Nice specimen; take a quick look or a photo, and return it to help calcify the stream.

When I opened up the shells, however, I couldn't help noticing a simply gigantic blister pearl on the posterior part of the left valve. Anyone working with bivalves has seen blister pearls. They are usually tiny raised bumps of nacre hiding a speck of sand or other foreign particle but still fully attached to the inside of the shell, not free like a true pearl. In this Louisiana pearlshell, the 81.4mm left valve is 42.8mm high, about average for the species or perhaps a bit on the small side. The blister pearl itself is 22.6mm high, 16.9mm wide, and raised a whopping 13.8mm above the inner surface of the valve. The blister pearl is situated in the area occupied by the siphons of the mussel (incompletely



**Facing page: *Margaritifera hembeli* (Conrad, 1838), the Louisiana pearlshell found by the author in Loving Creek, Rapides Parish, Louisiana, 2 Nov. 2007. The shell is 81.4mm in length.**
**Above: Close up (approximately X5) of the blister pearl from this specimen. This detailed view clearly shows the pearl is made up of a series of smaller blister pearls that have become fused together into this large pearl.**

developed in this species). When placed together, the two valves of this specimen barely closed.

Although all the nacreous material is formed into one blister, it's obvious that the pearl represents many smaller growths along the dorsal edge of the blister fusing into one irregular pearl and that then fusing into a larger, more uniform ventral part of the blister. The large ventral part of the blister pearl is distinctly salmon-colored, contrasting with the iridescent violet lining of the valve.

Though small blister pearls are common in freshwater mussels, I'm not aware of one this size being reported in the Louisiana pearlshell. It is likely that the species was once collected along with other freshwater mussels for the iridescent nacre (mother of pearl) of the interior valves that gives it its common name. The shells may have been used for buttons and decorative items, not a source of pearls, but there is little direct evidence of this in recent times. The size of this blister pearl must have made life hard for the mussel, and it could have led at least indirectly to its death.

*Margaritifera hembeli* is now a Louisiana endemic. Older literature lists it as also occurring in the Escambia River basin of Alabama, but in 1982 the Alabama pearlshells were described as a distinct but closely related species, *Margaritifera marrianae* R.I. Johnson, 1983, which has a more corrugated (washboard-like) posterior slope to the shell. In Louisiana pearlshells the posterior slope is only weakly corrugated, the ridges most obvious when lighted from the side.

My thanks to Steve Shively for letting me study and report on this specimen. It is now in the collection of the Calcasieu Ranger District, Kisatchie National Forest, Gardner, Louisiana. If you are interested in more information on this seldom-seen species, the following papers provide an introduction to the literature on Louisiana pearlshells.

**Curole, J. P., D. W. Folz & K. M. Brown.** 2004. Extensive allozyme monomorphism in a threatened species of freshwater mussel, *Margaritifera hembeli* Conrad (Bivalvia: Margaritiferidae). *Conservation Genetics* 5:271-278.

**Smith, D. G.** 1988. Notes on the biology and morphology of *Margaritifera hembeli* (Conrad, 1838) (Unionacea: Margaritiferidae). *Nautilus* 102(4):159-163.

**Vidrine, M. F.** 1993. *The Historical Distributions of Freshwater Mussels in Louisiana*. Gail Q. Vidrine Collectables; Eunice, LA.

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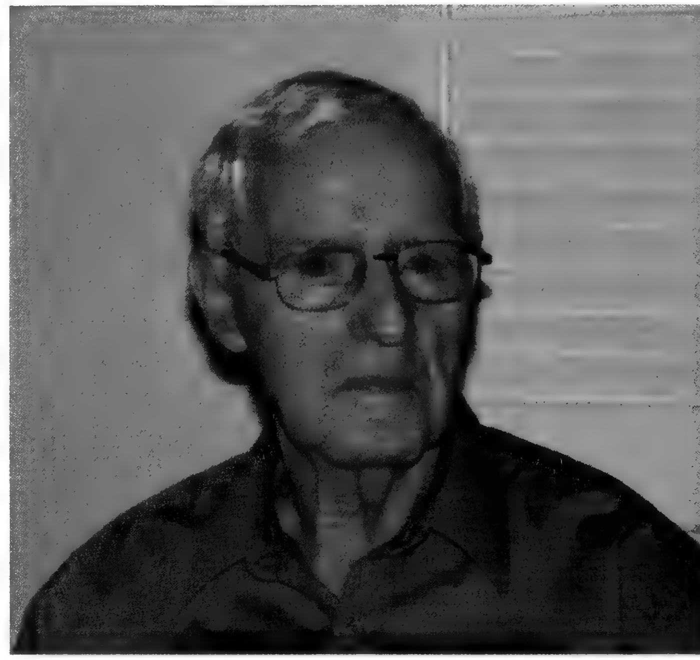
gyretes@prodigy.net

# Dr Donald T. Bosch - 90 Years Old*

By

Robert G. Moolenbeek

The following short biography is in recognition of the 90th birthday of Donald Bosch on 9 December 2007.



Dr Donald Bosch, October 2007

### PARENTS, EARLY YEARS

In 1907 a 22 year-old Dutchman, Taeke Bosch, immigrated to America from the province of Friesland in the northern part of the Netherlands. Being a so-called "cowmilker" (farm worker), he hoped to find a better life in his new home. After studying medicine and marrying Margareth A. Brown in 1913, the couple left for China as missionaries on request of the Reformed Church in America.

It was in China (Sio-Key Fukien) where Donald Taeke Bosch was born on the 9th of December 1917. In 1942, he married Hannah Eloise Boynton. On completion of medical studies at Iowa State University, World War II brought Donald Bosch to Europe as a medical officer. While in Europe at the end of the war, he took the opportunity to visit relatives in Friesland before returning home to the United States. Both Donald and his new bride felt that their skills could be of better use in other parts of the world as missionaries, so in September 1951 they sailed from New York to England, flew on to Beirut, then finally arrived in Basra, Iraq. They spent a few days in Basra with mission friends before leaving for Amarah, Iraq. There they stayed until the end of 1954, training in language and other skills they would need in their posting in Oman.

### MEDICAL CAREER

In 1955, Donald started service in Oman as a surgeon in the Mission Hospital in Mutrah. He visited his patients all over the country, not just in the hospital. He often traveled on the back of a donkey or camel rather than by car. Many of his patients had never seen a doctor. By 1960, after their children David, Paul, and Bonnie left for India to continue their education, Eloise started to teach full-time at the Mission school.The year 1970 proved to be a major transitional phase for Oman. His Majesty Sultan Qaboos bin Said al Said came to power and Oman moved steadily forward on the road of progress. In 1973 the Sultan bestowed the Order of Oman on Dr Bosch, the first American citizen to receive this honor.

### COLLECTING SEASHELLS

One of the favorite family activities was going to the beach or camping on the weekend when they had a day or two off. These beach trips were the foundation of their interest in shells. Shells were everywhere, on the beaches, under rocks, and in the water. They visited remote places, like the now famous Masirah Island. Collecting shells in their spare time started as a family hobby, then became serious study that resulted in the publication of their first book, "Seashells of Oman."

With the assistance of William [Bill] Old from the American Museum of Natural History in New York, both Henry Coomans and Robert Moolenbeek of the Zoological Museum of Amsterdam, and other malacologists, "Seashells of Oman" was published in 1982. Actually, Donald's research, with the help of his family, was a pioneering effort to uncover the unknown malacofauna of the northwest Indian Ocean. With the help of his Omani friends, expatriates like Michael Gallagher of the Oman Natural History Museum, Martin Day, John Bryan, and other scientists from all over the world, e.g. John Baxter, Rüdiger Bieler, Bill Emerson, Roland Houart, Bill Old, Kathie Smythe, and Anders Warén, Donald Bosch made a significant contribution to our malacological knowledge of this area over many years.

In 1984, both Donald and Eloise retired from active Mission work. They now divide their time between residences in America and Oman. During periods in Oman after retirement, collecting shells became a passion and the number of new finds they made for the region grew steadily.

### PUBLISHING

During 1989 they published their second book, "Seashells of Southern Arabia," a more popular and relatively inexpensive reference manual, written in English and Arabic. In the early 1990s, on their way back to the States, they often visited the Zoological Museum in Amsterdam. Donald expressed and discussed his ultimate goal, a complete book of all of the shells of the Arabian region. To realize this dream, he needed money and a team of specialists. With his Omani friends, the money problem was solved, and with the recruitment of S. Peter Dance as editor, Robert G. Moolenbeek for the gastropod section, and P. Graham Oliver

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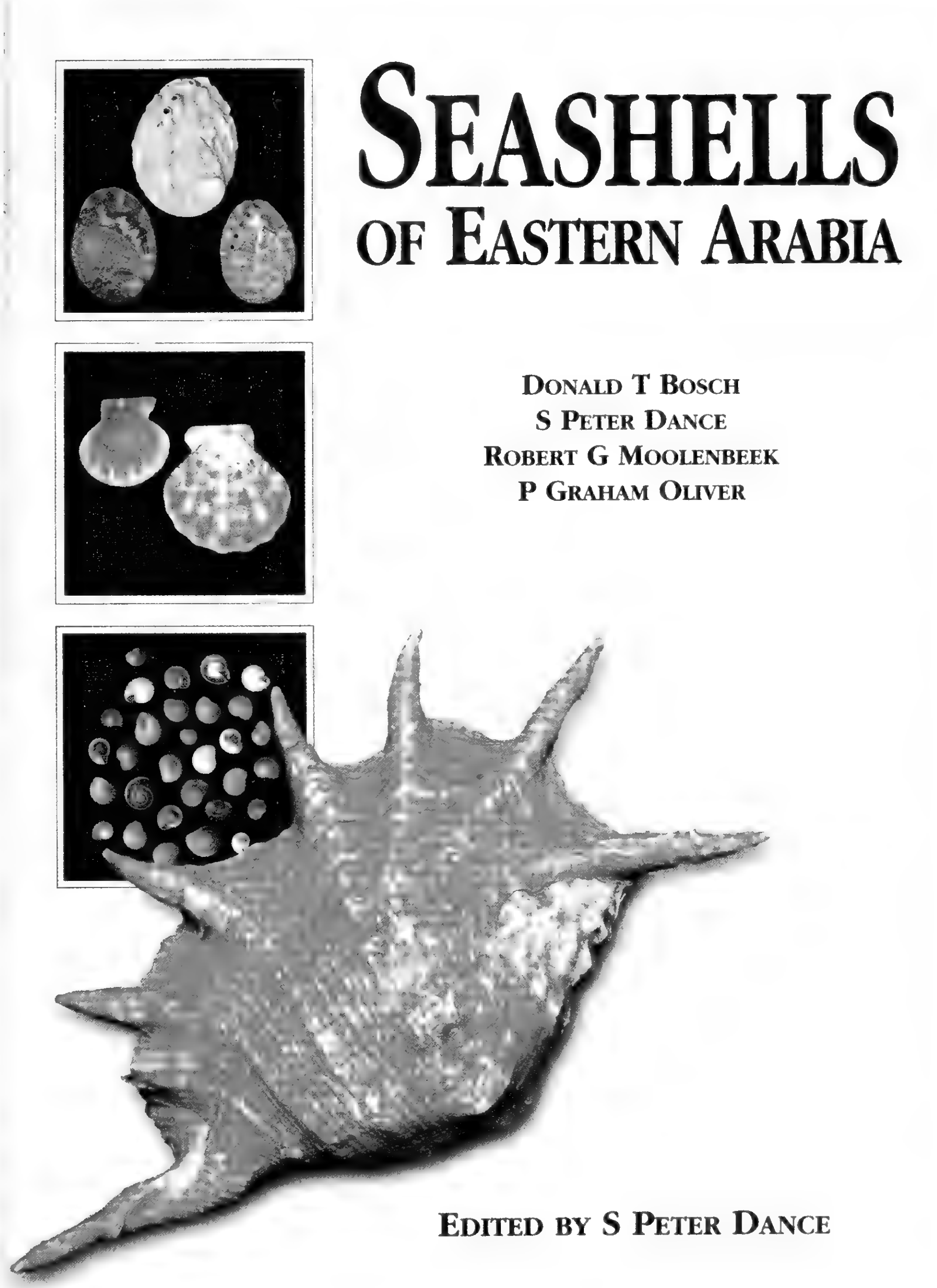
(National Museum of Wales) for the bivalve section, a solid base was established to fulfill his ultimate dream, "Seashells of Eastern Arabia."

Additional fieldtrips were organized to remote and fully unknown areas like the province of Dhofar and the Kuria Muria Islands (Al Halaaniyaat). In 1995, at my request, he organized a special expedition to these virtually unexplored islands. He arranged for the use of a landing-vessel from the Omani Royal Navy and the so-called Doghas Expedition was born (Van Pel & Bosch, 1996). In 1995, his dream volume was published by Motivate Publishing in Dubai. All together 864 gastropods, 376 bivalves, 12 scaphopods, 14 chitons, and 4 cephalopods were described and figured in full color. A book to be proud of even today!

### COLLECTION AND NEW TAXA

During their collecting activities, Donald and Eloise sent interesting specimens to scientists all over the world, resulting in the description of several new taxa, often named after Donald, his wife, or his relatives (see appendix 2). Apart from his Omani shells, he had a special interest in cowries that resulted in the building of a good worldwide Cypraeidae collection. In the United States, he was a regular visitor at shell shows and shell club meetings. He was or still is a member of the New York Shell Club, Chicago Shell Club, Santa Barbara Shell Club, and the South Carolina Shell Club. A great deal of his private collection is now in Cardiff (bivalves) and the Zoological Museum of Amsterdam.




**"Seashells of Eastern Arabia" was a culmination of years of work and study, and brought together many people who contributed directly or indirectly to the production of this valuable book and its ultimate success. This is one of the "key references" in conchology and belongs in every shell collector's library. Donald and Eloise Bosch have been long-time members of COA.**

### ACKNOWLEDGEMENTS

Without the information provided by Eloise Bosch, this article could not have been written. Bill Fenzan (Norfolk, VA) did an excellent job by correcting my English text.

### CHRONOLOGICAL BIBLIOGRAPHY

**Bosch, D. [T.] & Bosch, E.** 1982. Seashells of Oman, London, Longman Group, 206 pp.

**Bosch, D. [T.] & Bosch, E.** 1989. Seashells of Southern Arabia, Dubai, Motivate Publishing, 95 pp.

**Bosch, D.T.; Dance, S.P.; Moolenbeek, R.G.; & Oliver, P.G.** 1995. Seashells of Eastern Arabia, Dubai, Motivate Publishing, 296 pp.

**Van Pel, P.L. & Bosch, D.T.** 1996. The Doghas Expedition. Hawaiian Shell News 44(433): 1, 4.

**Bosch, D.T.** [1998]. Collectable Eastern Arabian Seashells, including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates; Muscat, Mazoon Printing Press [68 unnumbered pages].

[**Bosch, D.T.** 1998]. Eastern Arabian Seashells, representing many of the commonly found species, Card 1 & 2, Muscat, Mazoon Printing Press.

### READINGS

**Abbott, R.T.** 1987. Register of American Malacologists, 2nd edition, 1986-87, Melbourne, FL, American Conchologists, Inc., 164 pp.

[**Anonymous**]. 1997. Pocket full of miracles, American collectors in Oman find shells new to science, The Washington Post, March 31, 1997, pg. 4.

**Bosch, D. T.** 2002. The American mission hospitals in Oman, 1893-1974, 81 years, Muscat, Mazoon Printing Press, 144 pp.

**Bosch, D. & Bosch, E.** 2000. The doctor + the teacher, Oman 1955-1970, Memoirs of Dr Donald and Eloise Bosch, Muscat, Apex Publishing, 63 pp.

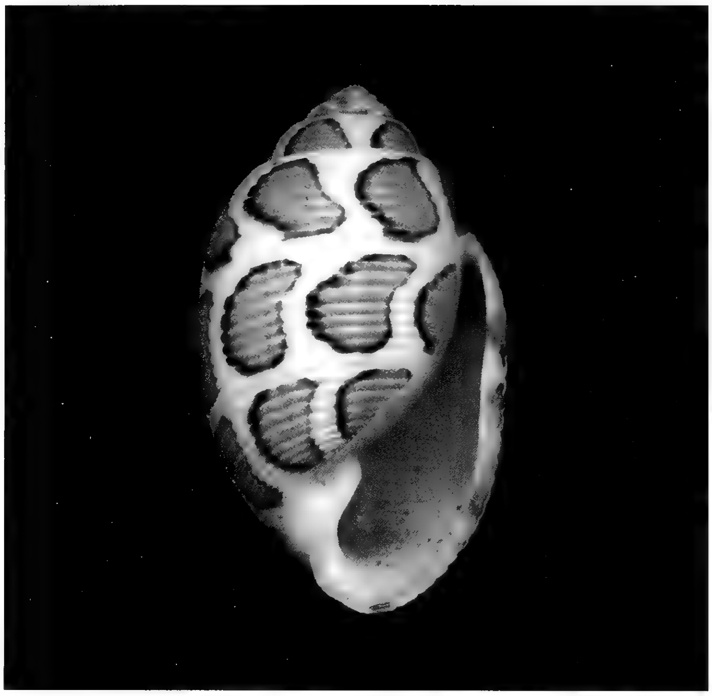
**Moolenbeek, R.G. & D. T. Bosch, D.T.** 2007. Description of a new genus and species, ***Omanimerelina eloiseae*** (Gastropoda: Rissoidae) from the upwelling zone of Dhofar, Sultanate of Oman, Miscellanea Malacologica *2*: 111-115.

### APPENDIX 1. GENUS AND SPECIES DESCRIBED BY DONALD T. BOSCH

2007: ***Omanimerelina eloiseae*** Moolenbeek & Bosch, Description of a new genus and species, *Omanimerelina eloiseae* (Gastropoda: Rissoidae) from the upwelling zone of Dhofar, Sultanate of Oman, Miscellanea Malacologica 2: 113-117.

### APPENDIX 2. GENUS AND SPECIES NAMED AFTER DONALD T. BOSCH OR HIS FAMILY

1970: ***Cymatium boschi*** Abbott & Lewis
*Cymatium boschi*, new species from the Arabian Sea, Nautilus 83: 86-88.
1972: ***Conus boschi*** Clover
Description of new species of *Conus* from South East Arabia, Venus 31: 117-118.
1973: ***Actaeon eloiseae*** Abbott
*Actaeon eloiseae*, a new opisthobranch from Arabia, Nautilus 87: 91-92.
1980: ***Ancilla* (*Sparella*) *boschi*** Kilburn
A new *Ancilla* from the Arabian Sea, and a discussion of two homonyms in the Ancillinae, Durban Museum Novitates 12: 167-170.
1984: ***Favartia* (*Favartia*) *paulboschi*** Smythe & Houart [named after son Paul]
*Favartia* (*Favartia*) *paulboschi*: a new muricid from Oman, Informations Société belge de Malacologie 12: 5-8.
1985: ***Latirus bonnieae*** Smythe [named after his daughter Bonnie]
Three new buccinids from Oman and notes on *Anachis fauroti* (Jousseaume), Journal of Conchology 32: 25-35.
1986: ***Lyria leslieboschae*** Emerson & Sage [named after daughter-in-law Leslie]
A new species of *Lyria* from the Arabian Sea, Nautilus 100: 101-104.
1986: ***Bursa davidboschi*** Beu [named after son David]
Taxonomy of gastropods of the families Ranellidae (=Cymatiidae) and Bursidae, Part 2, Descriptions of 14 new modern Indo-West Pacific species and subspecies, with revisions of related taxa. New Zealand Journal of Zoology 13: 273-355.
1991: ***Hypermastus boschorum*** Warén & Crossland
Revision of *Hypermastus* Pilsbry, 1899 and *Turveria* Berry, 1956, two genera parasitic on sand dollars, Records Australian Museum 43: 85-112.
1992: ***Umbonium eloiseae*** Dance, Moolenbeek & Dekker
*Umbonium eloiseae*, a new trochid species from Masirah Island, Oman, Journal of Conchology 34: 231-235.
1992: ***Turbo jonathani*** Dekker, Moolenbeek & Dance [named after grandson Jonathan]
*Turbo jonathani*, a new turbinid species from the southern coast of Oman, Journal of Conchology 34: 225-229.
1993: ***Priotrochus aniesae*** Moolenbeek & Dekker [named after granddaughter Aniesa]
A new species of *Priotrochus* from Oman, Bulletin Zoölogisch Museum Amsterdam 13: 171-174.
1993: ***Gabrielona roni*** Moolenbeek & Dekker [named after grandson Ron]
The Pheasant Shells of Oman, Venus 52: 141-148.
1993: ***Conus boschorum*** Moolenbeek & Coomans
New cones from Oman and the status of *Conus boschi*, Apex 8: 19-26.



***Acteon eloiseae*** **Abbott, 1973, 28mm, found in sand at low tide off Masirah Island, Oman. This elegant little shell is named after Eloise Bosch and is a favorite of shell collectors.**

1994: ***Nassarius emilyae*** Moolenbeek & Dekker [named after granddaughter Emily]
New nassariids from Oman and Somalia, Journal of Conchology 35: 9-15.
1994: ***Anachis donnae*** Moolenbeek & Dance [named after granddaughter Donna]
*Anachis donnae* a new columbellid species from Masirah Island, Oman, Journal of Conchology 35: 119-122.
1994: ***Boschitestella*** Moolenbeek, 1994 [type species ***Boschitestella donaldi*** Moolenbeek, 1994 by original designation]
The Orbitestellidae of the Sultanate of Oman with description of a new genus and two new species. Apex 9: 5-10.
1994: ***Boschitestella donaldi*** Moolenbeek - See description in genus ***Boschitestella.***
1994: ***Boschitestella eloiseae*** Moolenbeek - See description in genus ***Boschitestella.***
1994: ***Bourdotia boschorum*** Dekker & Goud
Review of the living Indo-West-Pacific species of *Divaricella* sensu auct. with descriptions of two new species and a summary of the species from other regions, (part 1). Vita Marina 42: 115-136.

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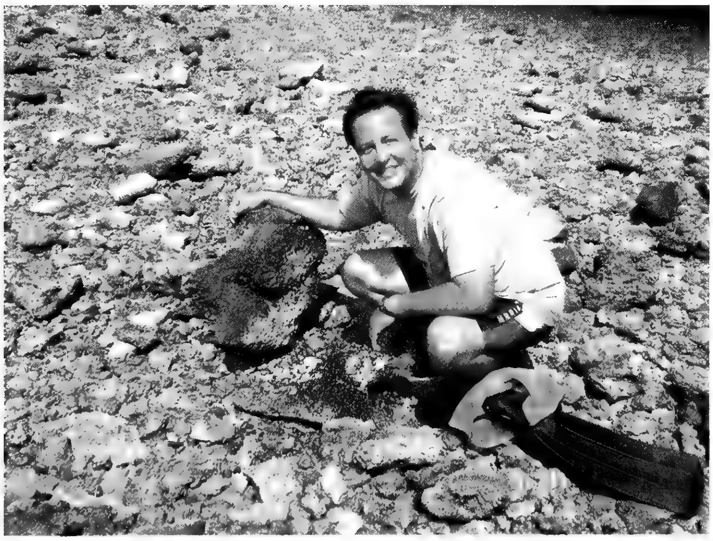
# Hermit Crab Swarm

## By Phil Fallon

Yes, thousands of tiny live hermit crabs, probably *Clibanarius tricolor* (Gibbes, 1850), as evidenced by their blue, equal-sized claws with red-ringed joints. More to the point, their appropriated shells were found piled up under a coral slab, not unlike the mass of honeybees that gather around their queen in her flight from the hive. The teeming mass was spotted sticking out from under the edge of the slab in the intertidal zone in Clifton Harbor of Union Island, the almost southernmost island of St. Vincent and the Grenadines (Grenada and its satellite islands, which are further south, are not part of this country). Petit Saint Vincent is a bit further south but hardly counts at only 113 acres and a population of approximately 50 (Wikipedia).

My chance discovery occurred during a morning shore walk a few hundred yards from the Kings Landing Hotel where my companions and I were staying (Neal Deynzer, Scott Ritchie, and Robert Masino). The swarm was located in very shallow water at low tide during the time of spring tides (just before the new moon). Neal displays (see photo) a different swarm located on the lee side of the same jetty, but this one is much less diverse and comprised principally of *Cerithium lutosum* Menke, 1828, due probably to the proximity of this group to the quiet shallow muddy habitat favored by this species. Just why they were so gathered is a mystery to me, possibly a daytime refuge and communal hangout before foraging after sundown? A gathering for mating? Perhaps it was a big shell-swap meeting? The crabs must have come some distance to be together since they were not visibly abundant anywhere else except in the swarm. In all seriousness, they are known to be nocturnal, and to cluster during the day. But why so many under a single slab when so many other slabs lie about? Smaller swarms were found in other parts of the bay by all of us, also under slabs in shallow water, so this seemed to be a universal behavior.



**Neal Deynzer holds up a rock slab to show a smaller cluster of hermit crabs.**

**Above: The pile of cleaned shells, showing the range of condition from seemingly fresh dead to worn beyond recognition.**
**Below: Closeup of the pile of shells.**

The swarm that I am reporting on here was found on just the other side of the jetty where Neal was photographed, on the northern (windward) side, but still somewhat protected from the open sea by an offshore breakwater (manmade of coral rock) such that the water is relatively calm. Between this offshore breakwater and the jetty lies open sand channels and grass flats. This diversity of habitats and the prevailing wind direction probably account for the remarkable number of species in the swarm, at least 80 and a little more than 8,100 shells! This find is not exactly a shell collector's dream come true though; the little buggers are not very fussy about their shells and while there were some fresh specimens in collectable condition, most were worn or encrusted, or just fragments. Some of the shells were so worn, the crab's parts were showing in places along the whorls' sides where the shell had worn away. Even bits of worm shells (*Vermicularia*) were in use, as were little lumps of coral with the right-sized holes in them. The little hermits will seemingly occupy any shell (or lump) of suitable size and, as can be seen in the photo of a pile of about half of the washed shells (second text photo), a large number of species were represented in this cluster.

It occurred to me that the shells in this swarm may be representative of many, if not most, of the species that occur in the area, and that no matter how thorough I searched under rocks and in the shallows, my scrounging would never match the skill of the crabs. Also, as noted above, the hermits are not particularly fussy about the age of their shells as long as they fit, so the assemblage of species in the swarm would represent a less temporally restricted one. With this in mind, and being very interested in knowing what species occur (or have occurred) here in Clifton Bay, the entire mass of shells (about 90% of it anyway) was gathered up for enumeration and identification.

The approximately 8,100 shells ranged from 3 to 18mm in their longest dimension, with the vast majority being around 8 to 10mm. The total volume of the shells measured approximately three pints liquid, as measured in our kitchen quart measuring cup (when Mary wasn't looking, of course). The shells were all examined under a stereo dissecting microscope. The mostly worn specimens were carefully compared to fresher ones, which were more readily identified, to ensure a reasonably accurate identification (and count) of each species. Still, 996 specimens could not be identified to family, and another 568 specimens could only be identified to family, which is altogether about 19.1% of the total that were unable to be identified to genus with any degree of certainty because of their worn condition.

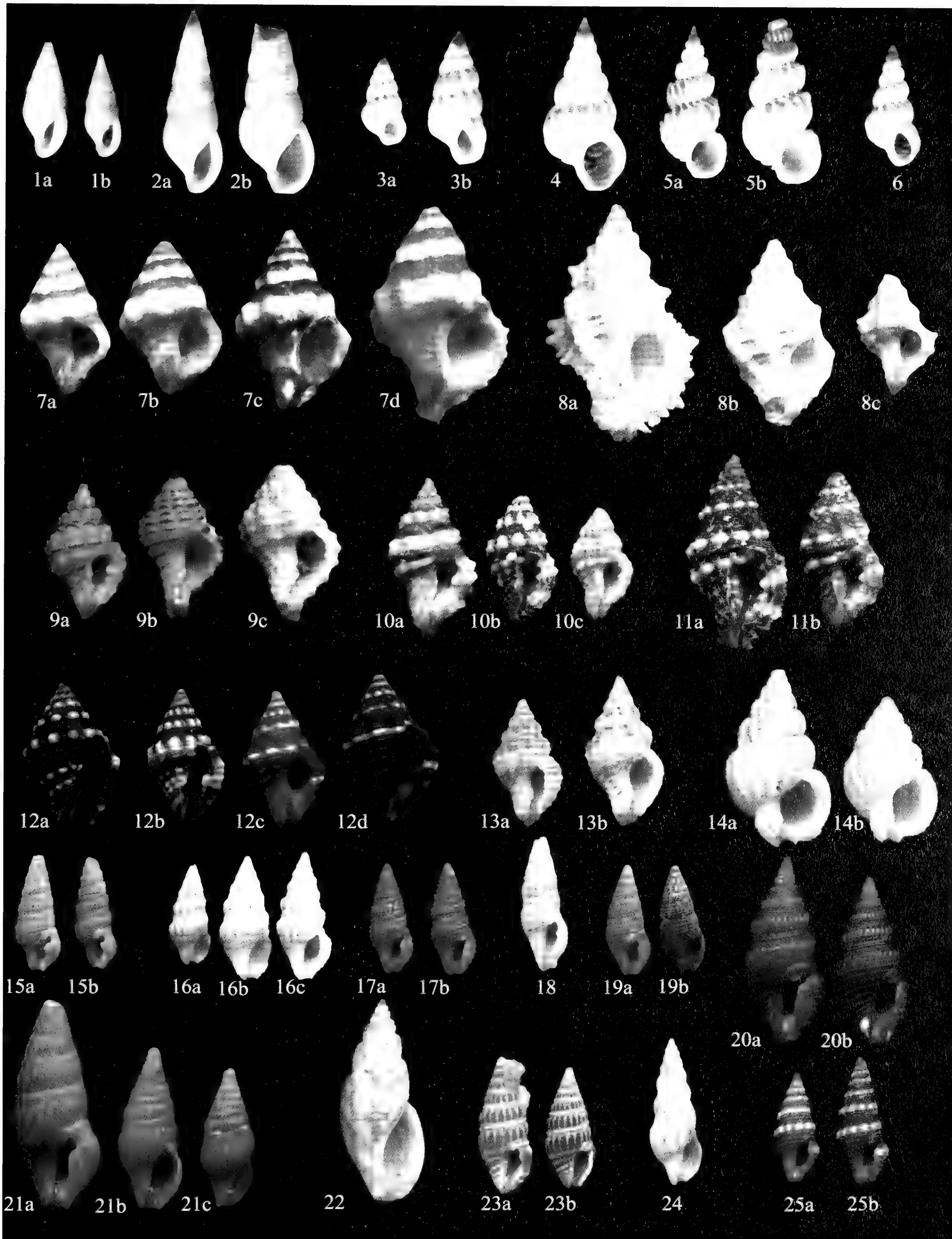
The majority of species are common and what one would expect to find in a couple of hours of morning rock turning, but there were some surprises (see list). The counts in the list give a good indication of the relative abundance of each species and group. Some brief notes about the more interesting and unusual species (at least to me) follow.

Three species of Rissoidae were present in the swarm: *Rissoina princeps* (C. B. Adams, 1850), *R. decussata* (Montagu, 1803), and *R. labrosa* Schwartz, 1860 in too poor a condition to photograph (the first two species are shown in figs. 1 and 2). These are among the largest members of the family; other members are very likely present locally but are probably too small for the hermits. The smallest specimen in the swarm was 6mm, which is at the upper end of most other species of Rissoidae. A real surprise was the presence of four species of very pretty wentletraps, the most common being *Opalia hotessieriana* (d'Orbigny, 1842) (fig. 3). The others, *Epitonium albidum* (d'Orbigny, 1842), *E. foliaceicosta* (d'Orbigny, 1842), and *E. novangliae* (Couthoy, 1838) (figs. 4, 5, and 6, respectively) were very uncommon at only one or two specimens each.

Muricids comprised 2.3% of the total number of specimens identifiable to family. Among them, *Attiliosa glennduffyi* Petuch, 1993, of which 101 were counted in the swarm, was a big surprise as it hasn't been reported in the literature outside of the Dominican Republic. Glenn Duffy, who examined and confirmed this identification (fig. 7), was also not aware of reports of this species outside of the DR (pers. comm.). Two specimens from the swarm (figs. 7a, b) are compared to a large 14mm specimen from the DR given to me by Glenn (fig. 7d). Although quite a bit of time was spent turning rocks, only a single other specimen (fig. 7c) was found in the intertidal area elsewhere in Clifton Harbor, an indication that this species probably favors the subtidal area. Glenn has found this species in the DR on rocks at 6 ft depths (pers. comm.). Empty shells may have been pushed up by tides and winds into the reach

**Facing Page: Some of the identified species we found. All imaged specimens are shown at the same magnification (approx. 2.8x).**

**1. *Rissoina decussata* (Montagu, 1803): 7, 8.1mm.**
**2. *Rissoina princeps* (C. B. Adams, 1850): 12.1, 12.8mm; 2b has the upper spire missing and may have been 15mm.**
**3. *Opalia hotessieriana* (d'Orbigny, 1842): 6.3, 8.9mm. Both of these specimens have intact protoconchs; the other 22 specimens in the swarm did not.**
**4. *Epitonium albidum* (d'Orbigny, 1842): 12mm.**
**5. *Epitonium foliaceicosta* (d'Orbigny, 1842): 10.5, 11mm.**
**6. *Epitonium novangliae* (Couthouy, 1838): the single 8.4mm specimen shown has faint spiral lines with microscopic reticulations between them, as is characteristic.**
**7. *Attiliosa glennduffyi* Petuch, 1993: 10.5, 10.2, 12, & 14.5mm. 7a, b are swarm specimens, 7c is from under coral rock in the intertidal zone elsewhere in Clifton Harbor, and 7d is from Meces, Dominican Republic, kindly given to me by Glenn Duffy.**
**8. *Murexsul huberti* (Radwin & D'Attilio, 1976): 17, 13, & 8.5mm. 8a is a fully developed specimen from Chatam Bay, Union I., included here for comparison with the other two, which are swarm specimens.**
**9. *Risomurex* sp.: 9.4, 9.7, & 10.3mm. 9b is from another intertidal area in Clifton Harbor; 9c is the swarm specimen. Both of these are very similar to *R. withrowi* Vokes & Houart, 1986, but are too worn and broken to make this more than a "most likely identification." 9a is a specimen of *R. schrammi* (H. Crosse, 1863) from Guadeloupe.**
**10. *Risomurex roseus* (Reeve, 1846): 7.8, 9.3, & 11mm. 10c is a swarm specimen that is compared with fresh one from elsewhere in Clifton Harbor (10b), a black form, and 10a, which is from Antigua and has the rosy flush over the white markings.**
**11. *Risomurex caribbaeus* (Bartsch & Rehder, 1939): 11, 14.5mm. The swarm specimen, 11b, is compared to a live-collected one, 11a, from elsewhere in Clifton Harbor.**
**12. *Engina turbinella* (Kiener, 1835): For comparison, a specimen from Panama (12a, 10.5mm), Tobago (12b, 9.2mm), and two swarm specimens (12c, d, 9.6, 11mm) are shown.**
**13. *Engina milleri* (Usticke, 1959): two swarm specimens 8.6, 10.4mm. See Redfern (2001: pl. 43, figs. 399A-B, as *Pollia* sp.) for photos of fresh specimens.**
**14. *Nassarius albus* (Say, 1822): 7.9, 9.4mm.**
**15. *Pyrgospira candace* (Dall, 1919): 7.8, 8.1mm.**
**16. *Buchema interpleura* (Dall & Simpson, 1901): 7.5, 8.8, & 8.9mm.**
**17. *Crassispira nigrescens* (C. B. Adams, 1845): 7.8, 7.9mm.**
**18. *Crassispira* sp.: 9.5mm.**
**19. *Strictispira pellisphocae* (Reeve, 1845): 7.6, 7.7mm.**
**20. *Strictispira paxillus* (Reeve, 1845): 9.8, 8.9mm.**
**21. *Crassispira apicata* (Reeve, 1845): 7.5, 8.6, 11.0mm.**
**22. *Daphnella lymneiformis* (Kiener, 1840): 14mm.**
**23. *Strictispira quadrifasciata* (Reeve, 1845): 9.0, 8.5mm.**
**24. *Kurtziella dorvilliae* (Reeve, 1845): 10.3mm.**
**25. *Sedilia melanacme* (E. A. Smith, 1882): 7.9, 8.9mm.**


1a 1b 2a 2b 3a 3b 4 5a 5b 6
7a 7b 7c 7d 8a 8b 8c
9a 9b 9c 10a 10b 10c 11a 11b
12a 12b 12c 12d 13a 13b 14a 14b
15a 15b 16a 16b 16c 17a 17b 18 19a 19b
20a 20b
21a 21b 21c 22 23a 23b 24 25a 25b

Hermit Crab Swarm: Constituent Taxa and Their Abundance In Phylogenetic Order

| Taxon/Group | Count | Group Total |
|---|---|---|
| Unidentifiable to Family | | 996 |
| *Calliostoma* sp. | 1 | |
| Total Calliostomatidae | | 1 |
| *Euchelus guttarosea* Dall, 1889 | 3 | |
| *Cittarium pica* (Linnaeus, 1758) | 3 | |
| *Tegula fasciata* (Born, 1778) | 177 | |
| *Tegula lividomaculata* (C. B. Adams, 1845) | 148 | |
| *Tegula excavata* (Lamarck, 1822) | 1 | |
| *Tegula gruneri* (Philippi, 1849) | 2 | |
| Total Trochidae | | 334 |
| *Arene* sp. | 1 | |
| *Arene cruentata* (Mühlfeld, 1829) | 15 | |
| *Arene bairdii* (Dall, 1889) | 24 | |
| Total Liotiidae | | 40 |
| *Eulithidium affine* (C. B. Adams, 1850) | 4 | |
| *Eulithidium bellum* (M. Smith, 1937) | 10 | |
| Total Phasianellidae | | 14 |
| *Astralium phoebium* (Röding, 1798) | 11 | |
| *Lithopoma tuber* (Linnaeus, 1758) | 2 | |
| Total Trochidae | | 13 |
| Unidentified Neritidae | 1 | |
| *Nerite peloronta* Linnaeus, 1758 | 1 | |
| *Nerita versicolor* Gmelin, 1791 | 2 | |
| *Nerita tessellata* Gmelin, 1791 | 12 | |
| *Smaragdia viridis* (Linnaeus, 1758) | 3 | |
| Total Neritidae | | 19 |
| Unidentifiable Cerithiidae | 479 | |
| *Cerithium litteratum* (Born, 1778) | 49 | |
| *Cerithium eburneum f. algicola* (C. B. Adams, 1845) | 290 | |
| *Cerithium lutosum* Menke, 1828 | 579 | |
| Total Cerithiidae | | 1,397 |
| *Modulus modulus* (Linnaeus, 1758) | 1,245 | |
| Total Modulidae | | 1,245 |
| *Angiola lineata* (da Costa, 1778) | 457 | |
| *Supplanaxis nucleus* (Bruguière, 1789) | 80 | |
| Total Planaxidae | | 537 |
| *Echinolittorina ziczac* (Gmelin, 1791) | 100 | |
| *Echinolittorina meleagris* (Potiez & Michaud, 1838) | 15 | |
| *Echinolittorina interrupta* (Philippi, 1847) | 40 | |
| *Echinolittorina tuberculata* (Menke, 1828) | 45 | |
| *Littoraria* sp. | 4 | |
| Total Littorinidae | | 204 |
| *Rissoina decussata* (Montagu, 1803) | 25 | |
| *Rissoina labrosa* Schwartz, 1860 | 8 | |
| *Rissoina princeps* (C. B. Adams, 1850) | 3 | |
| Total Rissoidae | | 36 |
| *Strombus sp.* | 2 | |
| Total Strombidae | | 2 |
| *Polinices lacteus* (Guilding, 1834) | 9 | |
| Total Naticidae | | 9 |
| *Cymatium labiosum* (Wood, 1828) | 2 | |
| Total Ranellidae | | 2 |
| *Opalia hotessieriana* (d'Orbigny, 1842) | 24 | |
| *Epitonium novangliae* (Couthouy, 1838) | 1 | |
| *Epitonium albidum* (d'Orbigny, 1842) | 1 | |
| *Epitonium foliaceicosta* (d'Orbigny, 1842) | 2 | |
| Total Epitoniidae | | 28 |
| *Trachypollia nodulosa* (C. B. Adams, 1845) | 8 | |
| *Trachypollia turricula* (von Maltzan, 1884) | 16 | |
| *Stramonita haemastoma* (Linnaeus, 1767) | 4 | |
| *Stramonita rustica* (Lamarck, 1822) | 4 | |
| *Mancinella deltoidea* (Lamarck, 1922) | 1 | |

| Taxon/Group | Count | Group Total |
|---|---|---|
| *Risomurex caribbaeus* (Bartsch & Rehder, 1939) | 11 | |
| *Risomurex roseus* (Reeve, 1846) | 4 | |
| *Risomurex* sp. (possibly *withrowi* Vokes & Houart, 1986) | 1 | |
| *Dermomurex* sp. | 2 | |
| *Murexsul huberti* (Radwin & D'Attilio, 1976) | 14 | |
| *Attiliosa glennduffyi* Petuch, 1993 | 101 | |
| Total Muricidae | | 166 |
| *Coralliophila caribaea* Abbott, 1958 | 11 | |
| Total Coralliophilidae | | 11 |
| *Columbella mercatoria* (Linnaeus, 1758) | 404 | |
| *Mitrella ocellata* (Gmelin, 1791) | 242 | |
| *Zafrona pulchella* (de Blainville, 1829) | 81 | |
| *Zafrona idalina* (Duclos, 1840) | 24 | |
| Total Columbellidae | | 751 |
| *Pisania pusio* (Linnaeus, 1758) | 71 | |
| *Engina turbinella* (Kiener, 1835) | 491 | |
| *Engina milleri* (Usticke, 1959) | 7 | |
| *Parviphos adelus* (Schwengel, 1942) | 12 | |
| Total Buccinidae | | 581 |
| *Leucozonia ocellata* (Gmelin, 1791) | 110 | |
| *Leucozonia nassa* (Gmelin, 1791) | 17 | |
| *Teralatirus cayohuesonicus* (Sowerby III, 1878) | 41 | |
| Total Fasciolariidae | | 168 |
| Unidentifiable Nassariidae | 35 | |
| *Nassarius* sp. | 1 | |
| *Nassarius albus* Say, 1826 | 17 | |
| *Nassarius albus* auct. non Say, 1826 | 384 | |
| Total Nassariidae | | 437 |
| Unidentifiable Olividae (Olivellinae) | 1 | |
| *Jaspidella jaspidea* (Gmelin, 1791) | 14 | |
| Total Olividae | | 15 |
| *Vasum capitellum* (Linnaeus, 1758) | 1 | |
| Total Turbinellidae | | 1 |
| *Voluta musica* Linnaeus, 1758 (7-7.5 mm juv.) | 3 | |
| Total Volutidae | | 3 |
| Unidentifiable Turridae | 52 | |
| *Pyrgospira candace* (Dall, 1919) | 21 | |
| *Buchema* **interpleura (Dall & Simpson, 1901)** | 13 | |
| *Crassispira apicata* (Reeve, 1845) | 56 | |
| *Strictispira quadrifasciata* (Reeve, 1845) | 31 | |
| *Crassispira nigrescens* (C. B. Adams, 1845) | 14 | |
| *Crassispira pellisphocae* (Reeve, 1845) | 306 | |
| *Crassispira* sp. | 1 | |
| *Strictispira paxillus* (Reeve, 1845) | 455 | |
| *Sedilia melanacme* (E. A. Smith, 1882) | 208 | |
| *Daphnella lymneiformis* (Kiener, 1840) | 4 | |
| *Kurtziella dorvilliae* (Reeve, 1845) | 1 | |
| Total Turridae | | 1,162 |
| *Heliacus cylindricus* (Gmelin, 1791) | 8 | |
| Total Architectonicidae | | 8 |
| *Bulla striata* Bruguière, 1792 | 9 | |
| Total Bullidae | | 9 |
| | | 8,189 |

of the hermit crabs. Another possible range extension may be an unidentified *Risomurex* species. The two Union Island specimens (figs. 9b, c) are in poor condition but the coloration of the fig. 9b specimen, and the surface sculpture of both the 9b and 9c specimens is similar to that of *R. schrammi* (Crosse, 1863) from Guadeloupe (fig. 9a). *Risomurex withrowi* (Vokes & Houart, 1986), can also have a similar coloration and surface sculpture (see either fig. 4 in Houart, 1990: 8, fig. 4, or Femorale web site, Photo Gallery, Muricidae, under *Muricopsis withrowi*, for a photo of a light-colored specimen with brown spiral cords.). A light-colored specimen of *R. withrowi* was not available to photograph for the line-up comparison, but the specimens in figs. 9b and 9c are most probably *R. withrowi* because all of the major spiral cords are brown, whereas *R. schrammi* has "three dark spiral lines, one at the suture, one at the periphery, and one at the base of the body whorl." (E. H. Vokes, 1994: 77). *R. withrowi*, is distributed from Colombia to Trinidad and Tobago, along the northern coast of South America (Vokes, 1994: 80), with a northern range limit of 12° North latitude (Malacolog 4.1.0). A Union Island occurrence would extend its range slightly northward.

*Risomurex roseus* (Reeve, 1846), a much more widespread species, was present in the swarm, but in poor condition and faded (fig. 10c). A live-taken specimen from elsewhere in Clifton Harbor (fig 10b) has no rose flush, as seen in the photo of the more characteristic specimen from Antigua (fig. 10a). This may represent a regional variant of this species. *Risomurex caribbaeus* (Bartsch & Rehder, 1939), to complete the list of *Risomurex* species found in the swarm, is shown in fig. 11b, and is compared to a live-collected specimen from elsewhere in Clifton Harbor, fig. 11a. These are typical for the species. *Murexsul huberti* (Radwin & D'Attilio, 1976) is not uncommon in the southern Caribbean; I have found this species as far west as Panama. The swarm specimens were mostly juveniles (figs. 8b, c). The fresh adult specimen shown in fig. 8a, was dead-collected from Chatam Bay, Union Island, in 21 feet of water and is pictured here for comparison. This species is a subtidal reef dweller.

At almost 500 specimens in the swarm, *Engina turbinella* (Kiener, 1835) dominated the buccinids (fig. 12), which altogether comprised 8.1% of the total number of specimens identifiable to family. The local form, as represented by the two photographed swarm specimens (fig 12c, d), have a single white spiral cord at the whorl's periphery. This species is quite variable elsewhere; specimens from Panama (fig. 12a) and Tobago (fig. 12 b) have a different number of white cords around the periphery and also have white-knobs at the shell's periphery and white-beaded cords in the anterior region. All of the swarm's many specimens had just the single white cord. While specimens from around the Caribbean are quite different, locally they seem to be fairly uniform. *Engina milleri* (Usticke, 1959) (7 specimens) is uncommon in the swarm specimens and rare in the West Indies, occurring from Abaco, Bahamas (Redfern, 2001: 94; pl. 43, figs 399A, B; pl. 110, fig. 399C, as *Pollia* sp.) to Grenada (Nowell-Usticke, 1969: 17). The specimens from the swarm (figs. 13a, b) are bleached but have the distinctive brown spiral cords, a single white cord around the periphery, and columellar dentition. The 71 swarm specimens of *Pisania pusio* (Linnaeus, 1758), common throughout the Caribbean, were all juveniles (5.1-14.8 mm).

The Nassariidae were quite common in the swarm at 6.1% of identifiable specimens, and the unnamed species known as *Nassarius albus* of authors, not (Say, 1826) was by far the most common. When the protoconch is intact, this species is distinguishable from *N. albus* (Say, 1826) (figs. 14a, b) by the presence of a lecithotropic (non-planktonic development) protoconch, rather than the symmetrical, polyspiral one characteristic of a species that undergoes planktonic development (see photos in Kaicher, 1982: cards 3139 and 3234). *N. albus* of authors, not (Say, 1822) is not shown in the plate but there are other subtle differences in the sculpture and shape of these two species that became evident after examining the large number specimens from the swarm. They were in surprisingly good shape and most had intact protoconchs. Elsewhere on Union Island, the most common nassarid observed was *N. antillarum* (d'Orbigny, 1842) (diving in 25 to 80 ft depths.), and the less abundant *N. candidissimus* (C. B. Adams, 1845), also at these depths.

Eleven species of turrids comprised 16.2% of specimens identifiable to family. This was the third most abundant family after the Cerithiidae (19.4%) and Modulidae (17.3%). The most abundant species of the turrids is *Strictispira paxillus* (Reeve, 1845), recognizable by its acuminate tip and robust form (figs. 20a, b). *Crassispira pellisphocae* (Reeve, 1845) is also quite distinctive in having evenly spaced, lighter colored, and slightly raised spiral lines. The shell may be either black or brown (figs. 19a, b). The third most abundant species, *Sedilia melanacme* (E. A. Smith, 1882), is easily distinguished from similar-looking members of *Pilsbryspira* by the lack of beaded cords, or nodules, in the anterior region. The single specimen of *Kurtziella dorvilliae* (Reeve, 1845) is a very fresh large adult specimen (fig. 24). Although not evident in the photo, the characteristic fine, evenly spaced, raised spiral cords are present. The status of this species is unsettled because as Dr. Harry Lee has pointed out (pers. comm.), the photo of the type specimen in Kaicher (1984: card 3891) is not the same species as the drawing in Reeve (1845: pl. 28, fig. 249). This swarm specimen closely matches the one depicted in Kaicher (1984). *Pyrgospira candace* (Dall, 1919) is another fairly recognizable species because of its shortened body whorl and tall spire. Maes (1983: 390) states that that this small species is uncommon but may be fairly widespread in the Caribbean; however, published reports of its occurrence are still extremely rare, and almost non-existent outside of the Lesser Antilles.

Much more can be said about this remarkable assemblage of the small gastropods of Clifton Harbor. Who would have suspected that so much information could be gleaned from the chance find of a swarm of the humble hermit crab under a single slab of coral? The list of taxa speaks for itself.

Acknowledgement and thanks are due to Robert, for leading our band of adventurers on this wonderful exploratory journey to paradise, who freely shared his extensive knowledge of the identity and habits of the local mollusks; to Neal and Scott, my other travel companions, for their camaraderie; and to Glenn for his confirmation of the identity of *A. glennduffyi* and for sharing his knowledge of their habitat in the DR.

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# The American Malacological Society

The 74th annual meeting of the **American Malacological Society** will be held in Carbondale, Illinois from June 29 - July 3, 2008, and online registration and abstract submission are now available. Please visit the "next meeting" page at the AMS website for more information. From there, you will find a link to the official meeting site where you can register for the meeting, submit abstracts and find information about the planned symposia, special sessions, receptions, the banquet, and field trips as well as travel and housing options.

The AMS "next meeting" page is at: http://www.malacological.org/meetings/next.html. You can also go directly to the official site for the 2008 meeting at: http://www.dce.siu.edu/conferences/080204malacological.htm. Please contact me if you have any questions. We hope to see you in Carbondale this summer!


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Announcing a joint congress of the 5th **CEMS** (**Congress of the European Malacological Societies**) and the 2nd **AINIC** (**Atlantic Islands Neogene**) to be held at the University of the Azores (São Miguel Island) from 2-6 September 2008. Themes for the congress include: challenges of fisheries and malacological aquiculture; mollusk conservation; origin, diversity, and phylogeny of mollusks; biogeographical processes and patterns; mollusk ecological models; terrestrial mollusk biogeography; and mollusks and conservation biology. The Azores are located in the middle of the Atlantic Ocean, some 1,500km west of Lisbon (mainland Portugal).

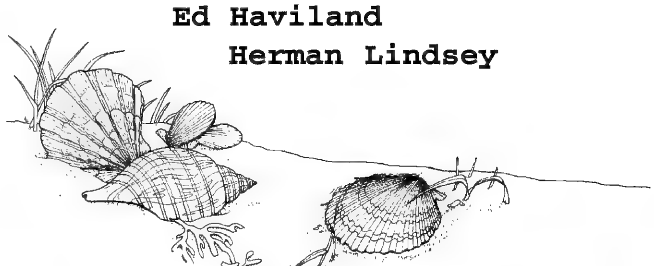
All information is available at the following webpages:
http://www.euromalac2008.org/index.html
http://www.euromalac2008.org/ainic2_hom.html

Best wishes to all,

Sérgio Ávila (Vice-chairman of 5th CEMS, 2nd AINIC).

**In Memoriam:**

**Ed Haviland**
**Herman Lindsey**



# SCUM XII: Southern California Unified Malacologists

## by Lindsey T. Groves

**Front Row: Lindsey Groves, George Davis, Don Cadien, Kathy Kalohi, LouElla Saul, Debbie Roman, Hans Bertsch, Richard Squires.**
**Second Row: Constance Gramlich, Bob Moore, Lawrence Mosher, Shawn Wiedrick, Chuck Powell, Rosa Campay-Bertsch, Carol Stadum.**
**Third Row: Phil Liff-Grieff, Terry Rutkas, Ángel Valdés, Mike Vendrasco.**
**Fourth Row: John Alderson, Bob Stanton, Doug Eernisse, Lance Gilbertson, Jim McLean, Bob Dees, James Jacobs, Christine Fernandez.**
**Top Row: Scott Rugh, Mike Kirby, Wes Farmer, Benjamin Pister, Pat LaFollette, Bill Huber, Maggie Carrino, George Kennedy. Image courtesy of George Davis.**

Thirty-five professional, amateur, and student malacologists and paleontologists attended the 12th annual gathering of Southern California Unified Malacologists (SCUM) in the education classroom of the Natural History Museum of Los Angeles County (LACM), Los Angeles, California, on Saturday, January 19th, 2008. This informal group continues to meet on an annual basis to facilitate contact and keep members informed of research activities and opportunities. In keeping these gatherings informal, there are no dues, officers, or publications. It is hoped the continuing success of informal groups such as SCUM, Bay Area Malacologists (BAM), and Mid-Atlantic Malacologists (MAM) will encourage other regional groups of malacologists and paleontologists to meet in a similar manner. The newly organized Ohio Valley Unified Malacologists (OVUM) held their inaugural meeting in October of 2007.

SCUM XII was hosted by Lindsey Groves who welcomed the group and updated everyone on recent happenings. After introductions, all SCUM attendees were given the opportunity to present current mollusk related research and/or activities. Most presentations were informal but several were more detailed. Of particular interest was the presentation by Benjamin Pister, a marine biologist at Point Loma National Monument, San Diego, CA. He stressed the notion that intertidal invertebrate research (especially molluscan) needs attention at Point Loma. He reviewed three management zones within the monument and their monitoring potentials. Doug Eernisse (Calif. St. Univ. Fullerton) formally updated everyone on his extensive research projects with his colleagues and grad students. Jim McLean updated the group on his progress on his identification guides to shelled gastropods of the northeast Pacific. Numerous discussions and comments resulted from these presentations. Following the meeting several attendees visited the world-class LACM Malacology section. SCUM XIII will be hosted by Ángel Valdés at Cal Poly Pomona in January of 2009.

## SCUM XII participants and their respective interests and/or activities:

**John Alderson** (Nat. Hist. Mus., L.A. Co.): researching the Cretaceous and Miocene faunas of the Santa Monica Mountains, especially the limestone beds between flows of the Conejo Volcanics (Miocene) with Bob Stanton.

**Hans Bertsch** (San Diego, CA): nudibranch research and offered the 2nd revised edition of *Sea of Cortez Marine Invertebrates* for sale.

**Don Cadien** (L.A. Co. Sanitation District): researching environmental biology of mollusks and crustaceans from bathyal and abyssal localities off southern California.

**Rosa Campay-Bertsch** (San Diego, CA): wife of SCUM member Hans Bertsch, no report.

**Maggie Carrino:** (San Diego Nat. Hist. Mus.): fossil lab preparation manager at SDNHM with an interest in fossil and Recent mollusks.

**George Davis** (Nat. Hist. Mus., L.A. Co.): Collection Manager of Crustacea and a part-time instructor of geology at Calif. St. Univ., Northridge with an interest in fossil mollusks.

**Robert Dees** (Orange Coast College): current President of Orange Coast College with an interest in shell collecting.

**Doug Eernisse** (Calif. St. Univ. Fullerton): in addition to teaching duties Doug has a myriad of research projects with professional and grad student colleagues including: systematics, phlylogeny, and radiation of Mopaliidae (chitons); the chiton chapter of the recently published *Lights Manual*; new species of intertidal limpets of California and Baja California; new techniques of chiton imagery; and seamount chitons.

**Wes Farmer** (San Diego, California): displayed some original artwork of opisthobranchs from the 1960's (and offered them for sale) and recounted his early days of shell collecting.

**Christine Fernandez** (Santa Barbara, CA): interest in chitons and their systematics.

**Lance Gilbertson** (Newport Beach, CA): research on helminthoglyptid land snails from the southwest United States including California, Arizona, New Mexico, and Texas.

**Constance Gramlich** (San Diego St. Univ.): Marine Science lab technician with an interest in mollusks.

**Lindsey Groves** (Nat. Hist. Mus L.A. Co.): fossil cowry research and work on the earliest known abalone (Late Cretaceous of Los Angeles County) with John Alderson. Continues with the companion volume to Keen & Bentson's (1944) *Check List of California Tertiary Marine Mollusca.*

**Bill Huber** (Cal. Poly. Pomona): spouse of Deborah Roman with an interest in Botany.

**James Jacobs** (San Diego Nat. Hist. Mus.): museum volunteer has collected with Collection Manager Scott Rugh.

**Kathy Kalohi** (Pacific Conchological Club): treasurer of the PCC and amateur shell collector and SCUBA enthusiast.

**Mike Kirby** (San Diego Nat. Hist. Mus.): paleontological field manager for the Department of Paleo Services at the San Diego Natural History Museum. Continues his interest in fossil and Recent oysters.

**George Kennedy** (Brian F. Smith & Assoc., Poway, CA): SCUM co-founder. Continues his research of Pleistocene marine terraces of California and paleontological monitoring projects around San Diego Co.

**Pat LaFollette** (Nat. Hist. Mus. L.A. Co.): research associate at LACM and currently reviewing and rearranging the Pyramidellidae in the malacology collection.

**Phil Liff-Grieff** (Pacific Conchological Club): editor of *Las Conchas* (publication of the Pacific Conchological Club) and land snail collector. Collector of chitons, terrestrial mollusks, and fossil mollusks and currently collaborating with Chuck Powell (USGS) on Pleistocene species at Rincon Hill, Ventura/Santa Barbara counties.

**Jim McLean** (Nat. Hist. Mus. L.A. Co.): Jim continues work on his eagerly anticipated volumes on North Pacific shelled gastropods. He presented over 100 sample plates and in an depth survey of his 44+ years of research.

**Bob Moore** (Pacific Conchological Club): former high school biology teacher, now a shell collector with an interest in marine species of southern California.

**Lawrence Mosher** (Pacific Conchological Club): amateur shell collector, particularly marine and terrestrial.

**Benjamin Pister** (National Park Service): marine biologist stationed at Pt. Loma Nat. Mon, San Diego, CA, solicited and encouraged ecological research of intertidal invertebrates at the monument.

**Charles Powell II** (U.S. Geological Survey): current president of the Western Society of Malacologists and continues with research of Neogene and Quaternary mollusks of California, especially their biostratigraphy.

**Debra Roman** (Calif. St. Univ., Northridge): grad student in the Anthropology Department and is researching chiton remains found in aboriginal middens of Baja California, Mexico.

**Scott Rugh** (San Diego Nat. Hist. Mus.): Collection Manager of Invertebrate Paleontology. Has been recently collecting in the Pliocene San Diego Formation in Border Field State Park.

**Terry Rutkas** (Pacific Conchological Club): amateur collector and particularly interested in species associated with Pacific island cultures.

**LouElla Saul** (Nat. Hist. Mus. L.A. Co., Res. Assoc.): research of Cretaceous mollusks with Richard Squires, particularly on the fossil aporrhaid genus *Tessarolax.* She also continues on a long anticipated volume on the invertebrates of the Miocene Topanga Formation.

**Richard Squires** (Calif. St. Univ., Northridge): fossil mollusk research, particularly the biostratigraphy and paleontology of Cretaceous through Paleogene gastropods and bivalves with LouElla Saul.

**Carol Stadum** (Carlsbad, CA): volunteers in the Invertebrate Paleontology section of SDNHM. Currently researching "Topanga aged" fossils from the Los Angeles Basin at the San Diego Natural History Museum.

**Robert Stanton** (Nat. Hist. Mus. L.A. Co.): researching the Miocene faunas of the Santa Monica Mountains with John Alderson, especially the Conejo Volcanics. Also recording the Pliocene stratigraphic distribution of mollusk fossils along the Pacific coast with Chuck Powell.

**Ángel Valdés** (Calif. Poly. Univ. Pomona): a professor at California Polytechnic University, Pomona, where he teaches Evolutionary Biology and continues phylogenetic research on opisthobranch gastropods of the Caribbean and Panamic provinces.

**Mike Vendrasco** (Calif. St. Univ., Fullerton): research on fossil (especially from the Pliocene San Diego Formation) and Recent chitons whilst teaching part-time at CSUF.

**Shawn Wiedrick** (Pacific Conchological Club): current president of the PCC and interested in all areas of shell collecting (especially turrids).

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# Book Review: Annotated and Illustrated Catalogue of Recent Cancellariidae

## by Jens Hemmen
## published by the author, Wiesbaden, Germany, 2007, 428 pp.

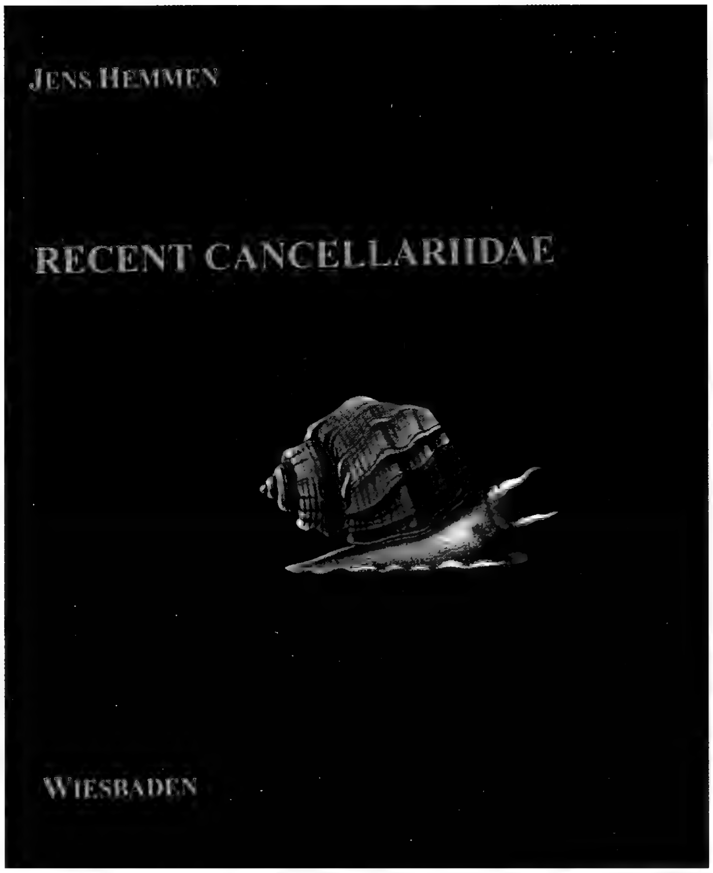
A few years back, I was looking through a shell book and realized, "Hey! There are more nutmegs than just *C. reticulata*!" I didn't know a whole lot about the nutmegs, so I decided to "adopt" another "orphan" family. At that time, only a few species were routinely available from the dealers. Despite some amazing diversity in structure, all of the species were called "*Cancellaria*," or very rarely "*Trigonostoma*." The literature on the family was scattered, there was no recent monograph, and regional guides generally only showed the same few species. I was desperate for help in bringing order to the chaos that was the family!

To my great delight, I recently saw that Jens Hemmen had published a book on "Recent Cancellariidae" and wasted no time in ordering a copy. Rather than being the monographic treatment for which I had hoped, the book is, as the inside title indicates, an "annotated and illustrated catalogue."

The work begins with an "Introduction" that briefly summarizes what is known of the anatomy, feeding, poecilogony [more than one mode of reproduction within a single species, i.e. planktotrophic and non planktotrophic larval development within a single species], shells, and systematics in the family. Much of this is presented as direct quotations (properly credited) from the original literature. What becomes immediately evident is that precious little is known for sure about the biology of the nutmegs. The various conjectures on feeding habits and preferences illustrate the often-contradictory information "known" about this enigmatic family.

The catalogue itself forms the bulk of the work. Species are presented alphabetically by specific name. Most of the species are distributed among a variety of genera, but I was disappointed that many species are still listed as "*Cancellaria* (s.l.)" or "*Trigonostoma* (s.l.)." For species considered valid, the following information is given, as available: type material, type locality, range, habitat, remarks, and references. Nearly all of the valid species are accompanied by a black-and-white photograph or drawing. Type material and locality are generally noted for synonyms, as well. The references are listed chronologically from 1757. They include at least the original citation, and some lists are extensive. I cannot determine the significance of boldfaced type in some of the reference lists. It is often, but not always, the original description. I thought it might indicate an illustration, but some illustrated sources, such as the Kaicher card pack, are not boldfaced. Type material has been preferred for illustration, and the source of each illustration is noted. Junior synonyms are listed in their place in the sequence and cross-referenced to their valid name.

Following *Cancellaria ziervogeliana* Lamarck, 1822, (actually a mitrid) at the end of the catalogue, an appendix lists twelve "unidentified or doubtful species." Only four of these are illustrated in the book. Appendix 2 is a list of nomina nuda, both Recent and fossil, in the family; some of these (the Recent ones?) are listed alphabetically in the catalogue and noted as nomina nuda.




The extensive bibliography is divided into a main section and a shorter section of "Secondary literature." The distinction is not explained, and it would have been easier for the user as a single list.

The work is not the illustrated monograph that I had hoped would clarify everything about this confusing family. At this stage of our knowledge, that's too much to hope for from any author. In his foreword (p. 5), Hemmen states that "Unfortunately we had to make the experience that the (tremendous) idea to figure all or at least most of the Recent species had to fail." There is not a lot of original information here, but the author has managed to organize, summarize, and make accessible a tremendous library of obscure literature, a very necessary first step to any monographic effort and a vast amount of useful information in its own right. While it has its shortcomings—and what book doesn't?—I recommend Hemmen's "Recent Cancellariidae" to anyone trying to get a handle on this difficult and fascinating family.

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# Book Review: Lovell Augustus Reeve (1814-1865): malacological author and publisher

## By Richard E. Petit

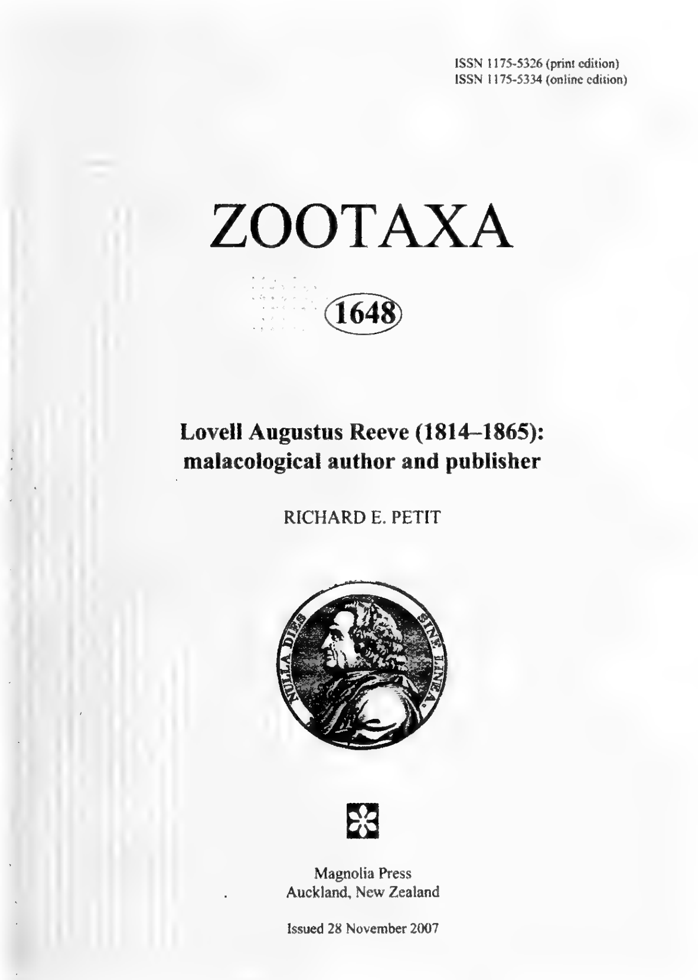
**published in Zootaxa, Magnolia Press, Auckland, New Zealand**
**28 November 2007, pp. 120, ISSN 1175-5326 (print edition)**
**ISSN 1175-5334 (online edition)**

Richard Petit has once again provided the conchological community with an important publication. His most recent work is a biography of Lovell Augustus Reeve that not only recounts the life of this luminary of the shell world, but also, and perhaps more importantly, lists and dissects Reeve's conchological publications. In recounting Reeve's life and times, Richard Petit goes beyond the normal dry discourse of facts one would expect. In the words of COA member Harry Lee, "The man's personal, family, and professional life is explored in detail including lots of previously unpublished archival correspondence and notes. The grand master is not canonized; foibles, idiosyncrasies, successes, and failures alike are bared." (Conch-L, subj. "All About (Re) eve," 5 Jan 2005)

Petit also provides the reader with corrected publication dates and a complete collation of Reeve's works. Much of this detail is provided for the first time and must have involved an almost unimaginable depth of research. Providing (and proving) the correct date for 200-year-old publications that were printed with the incorrect date or with no date is certainly no easy task, but a necessity with more than one of Reeve's publications and provided here as almost a matter-of-course. Publication details include: co-authors, contemporaries, illustrators, dates of serial publications, newly introduced taxa (not given for *Conchologia Iconica*), reviews, errors, and (perhaps most interesting) little known facets of the publication process for the major works by Reeve.

Lovell Augustus Reeve (1814-1865) "...was a major figure in 19th Century malacology in England" and is well known today to almost every shell collector as the author of many mollusk species. (He was also a publisher with his own printing firm.) Students and professionals in malacology and conchology will perhaps best know him as the author of the *Conchologia Iconica*, a mammoth work begun in 1843 and terminated in 1878 (13 years after Reeve's death). It was designed as a series of monographs that would eventually illustrate all mollusk species. To this end it consisted of 20 volumes (14 of which , plus parts of vols. 15 &16 were written by Reeve; the others were written by G.B. Sowerby II), 2,727 plates (all but 5 hand-colored), and it remained in print until the mid 20th century. Reeve published, authored, and co-authored many other books and articles (the count is over 100), but it is the *Iconica* for which he is best known. Other important works by Reeve that are thoroughly covered by Petit include: *Elements of Conchology*, the *Conchologia Systematica*, *The Land and Freshwater Mollusks Indigenous to, or Naturalized in, the British Isles*, and *The Zoology of the Voyage of H.M.S. Samarang*.

This monograph is not intended for the casual reader or someone looking for help in identifying shells. On the other hand, anyone who has a copy of Reeve's *Iconica*, as well as conchologists and malacologists interested in taxonomy or the history of conchology would certainly be well served by either purchasing a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ZOOTAXA

1648

**Lovell Augustus Reeve (1814–1865): malacological author and publisher**

RICHARD E. PETIT



Magnolia Press
Auckland, New Zealand

Issued 28 November 2007

printed copy from the publisher or downloading a copy. The wonderful thing about Zootaxa publications is that you can access many of them online and determine if it is a volume that should be added to your library. Zootaxa is online at: http://www.mapress.com/zootaxa/index.html Other works by Petit available at Zootaxa include: *George Perry's molluscan taxa and notes on the editions of his* Conchology *of 1811* and *Catalogue of the superfamily Cancellarioidea Forbes and Hanley, 1851 (Gastropoda: Prosobranchia)* (2nd edition). He is also a coauthor (along with Eugene Coan and Alan Kabat) of *2400 years of Malacology*.

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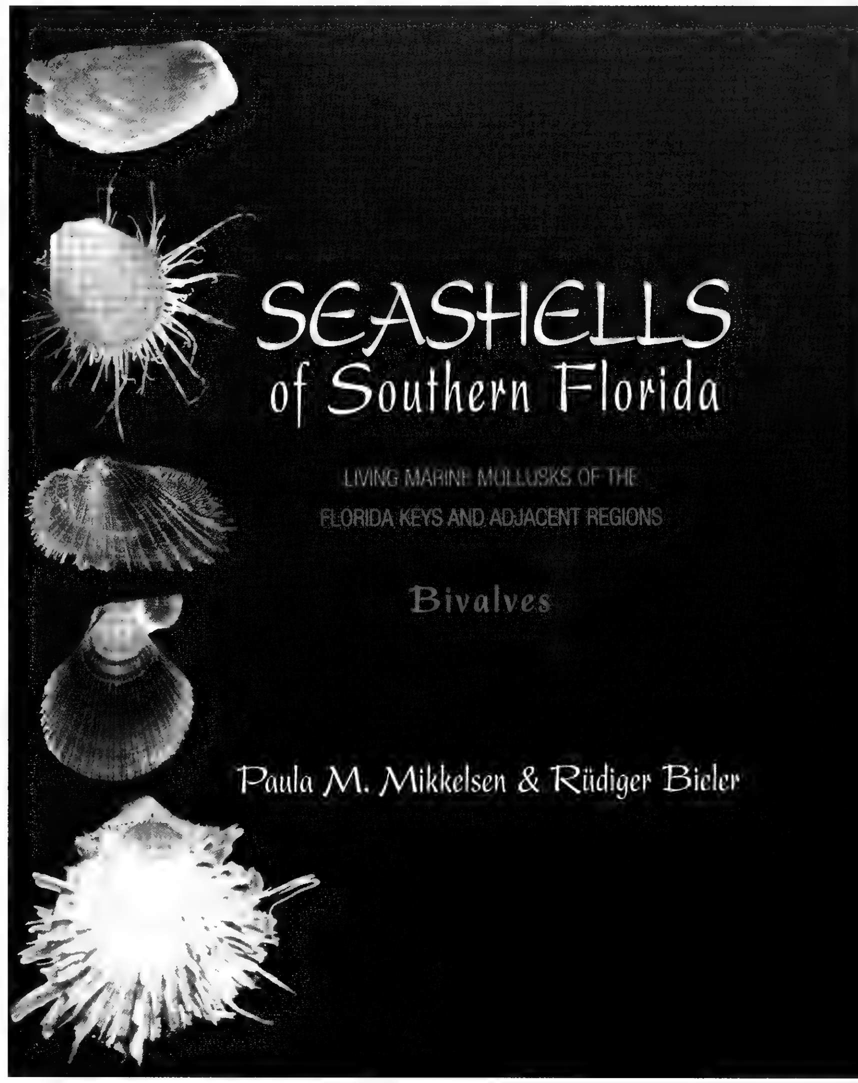
# Book Review: Seashells of Southern Florida, Living Marine Mollusks of the Florida Keys and Adjacent Regions: Bivalves

by Paula M. Mikkelsen & Rüdiger Bieler, 2008, Princeton University Press, Princeton, New Jersey, pp. 503, over 1,500 color illustrations and photographs

This is a truly marvelous book that raises the bar by quite a few notches for molluscan reference books. The authors have established the "gold standard" with a book that "...provides the most thorough treatment of living mollusks in this region ever written." (Gary Rosenberg, Academy of Natural Sciences Philadelphia)

There are 59 bivalve families covered, and each one includes a description of the family, the natural history of the family, fossil origins, the anatomy (with color illustrations presenting the anatomy of the animal within the shell), color photographs of each of the species found in southern Florida (with many *in situ* images of the living animal in its natural environment), and a full reference citation for the family. This breadth and depth of coverage is done for each family, in essence a complete monograph for each of the 59 families. Much of the information is presented here for the first time. "Seashells of Southern Florida" is a reference book that will prove valuable to professionals interested in Mollusca or Florida fauna, as well as amateurs looking for the best possible identification guide.




The description of each family covers the biology of that family (and how it relates to other families of bivalves) to a degree that would normally be found in a specialized biology monograph. Each species photograph is of a specimen deposited in a permanent museum collection. A section at the back of the book lists each species photographed, the shell dimensions, locality, and the museum where the specimen can be found. This is undoubtedly more information than many collectors think they want, but it will prove useful to professionals and many amateurs will find themselves going back to answer specific questions or fill in gaps of knowledge as they become more interested in a particular species or family. Readers will find there is an almost unbelievable variety in which the different bivalves cope with their environment and compete with other inhabitants.

The final section is an illustrated (in color of course) glossary! If you are reading about the Nuculidae and wonder what exactly is meant by the term "palp pouch," just turn to the glossary. There you will find the definition accompanied by a color illustration. This feature alone is worth the price of the book. "Seashells of Southern Florida" is sure to become a standard textbook.

This last paragraph is where a reviewer will throw in a complaint or two about an otherwise good book, just to prove the review was balanced and thorough. Not this time. This book deserves any and all superlatives. Buy it. You will be very glad you did. There are an additional two volumes planned for this series, gastropods and other mollusks (I assume). Both will be eagerly awaited and I have a spot already reserved for both in my library.

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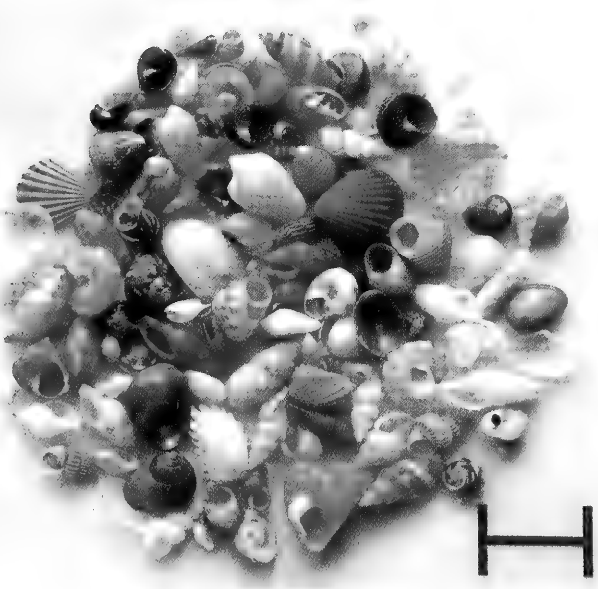
# New Zealand Endemic Mollusks

## by Zvi Orlin

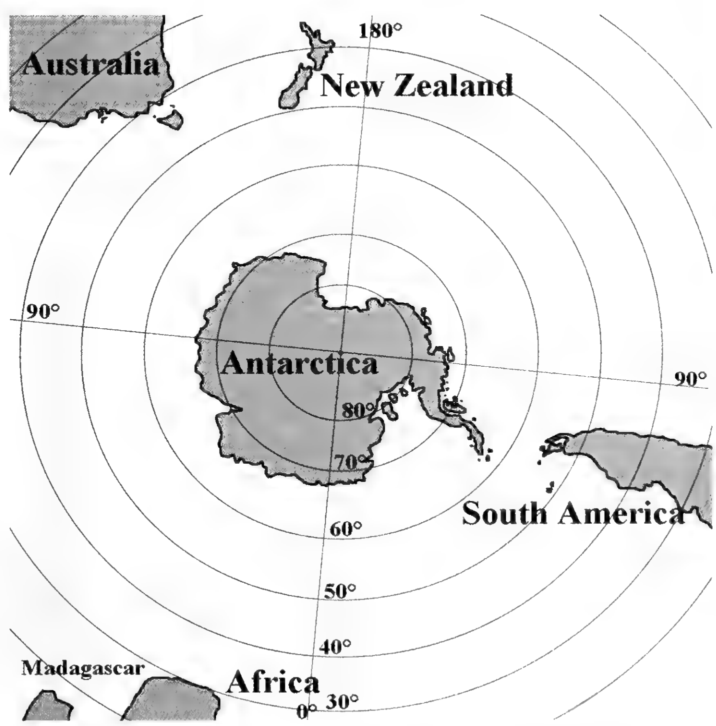
Far away in a corner of the S.W. Pacific Ocean is a beautiful and fascinating country, one of the most interesting locations for shell collectors. With 10,000km of coastline (roughly the same as the U.S.A.), innumerable bays, inlets, and fjords, and no one living more than 130km from the coast, no wonder shell collecting is popular. It is one of the only countries in which researchers have published a detailed checklist of all the 2,900 species and subspecies found in their country and the surrounding waters.

Regrettably I visited New Zealand before I had started shell collecting and could only join their shell club later by email. They are not only a charming and friendly people, but also magnanimous, as I soon discovered. I could not find anyone to exchange shells with, as most of them only collect local shells, but many club members sent me shells I was seeking, without asking for anything in return! In very few countries can such generous people be found.

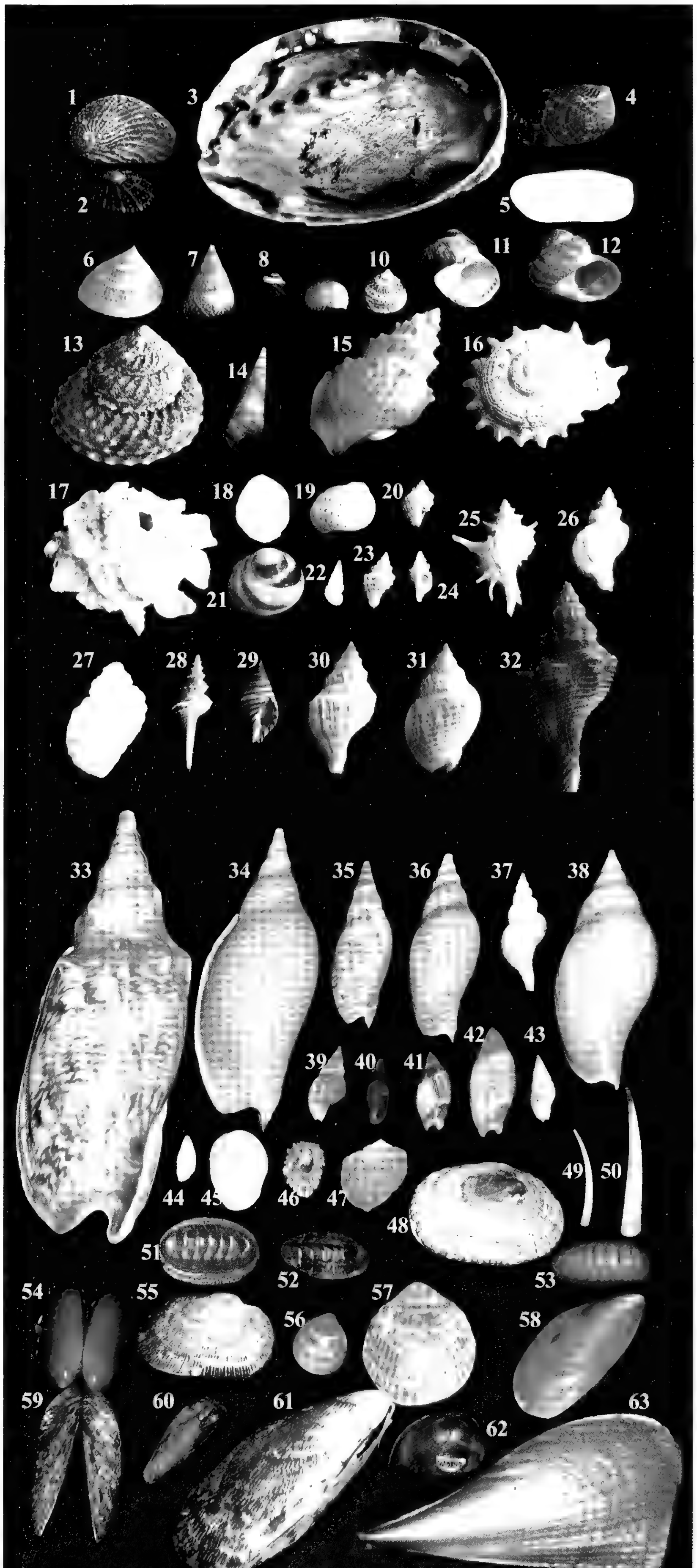
The range of New Zealand species, owing to the long coastline, is vast; with some tropical species off North Island, but cooler water species are predominant. The most amazing and interesting feature of New Zealand mollusk fauna is the endemism. Approximately 76% of the species are found only in New Zealand. This is not surprising as it was during the Triassic Era (65 million years ago) that New Zealand separated from the Antarctic continent, and it has remained separate from other landmasses by thousands of kilometers of ocean for millions of years. Such a location is conducive to the evolution of endemic species. The other interesting feature is that about 75% of New Zealand shells are micromollusks with adult shells less than 10mm in length (see references). I have not encountered such a feature in any other country, but that may be just because there has been insufficient research and micros have not been properly collected and recorded. Some of the New Zealand

A small colorful group of assorted micro shells from New Zealand. The scale bar is 10mm. Photo by Iain Anderson.



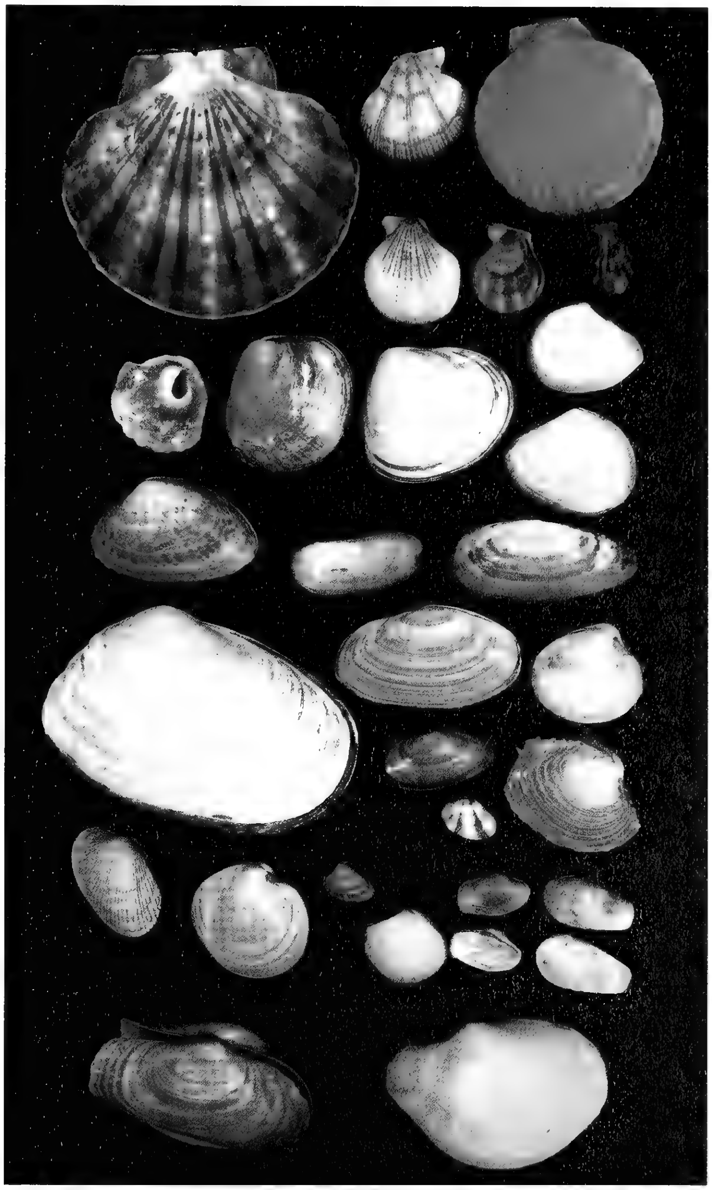
1. *Haliotis australis* Gmelin, 1791 52mm
2. *Cellana ornata* (Dillwyn, 1817) 31mm
3. *Haliotis iris* Gmelin 1791, 147mm
4. *Haliotis virginea virginea* Gmelin, 1791, 57mm
5. *Scutus breviculus* (Blainville, 1817) 60mm
6. *Calliostoma selectum* (Dillwyn, 1817) 32mm
7. *Cantharidus opalus* (Martyn, 1784) 37mm
8. *Diloma arida* (Finlay, 1926) 19mm
9. *Zethalia zelandica* (Hombron & Jaquinot, 1855) 22mm
10. *Trochus viridis* Gmelin, 1791, 20mm
11. *Turbo smaragdus* Gmelin, 1791, 38mm
12. *Modelia granosa* (Martyn, 1784) 40mm.
13. *Cookia sulcata* (Gmelin, 1791) 67mm
14. *Maoricolpus roseus* (Quoy & Gaimard, 1834) 56mm
15. *Struthiolaria papulosa* (Martyn, 1784) 83mm
16. *Astraea heliotropium* (Martyn, 1784) 78mm
17. *Xenophora neozelanica neozelanica* Suter, 1908, 70mm
18. *Maoricrypta monoxyla* (Lesson, 1830) 33mm
19. *Tanea zelandica* (Quoy & Gaimard, 1832) 30mm
20. *Lepsiella scobina* (Quoy & Gaimard, 1833) 20mm
21. *Sigapatella terraenovae* (Peile, 1924) 31mm
22. *Boreoscala zelebori* (Dunker, 1866) 20mm
23. *Paratrophon quoyi* (Reeve, 1854) 24mm
24. *Prototyphis eos* (Hutton, 1873) 22mm
25. *Poirieria zelandica* (Quoy & Gaimard, 1833) 52mm
26. *Xymene ambiguus* (Philippi, 1844) 45mm
27. *Lepsithais lacunosa* (Bruguière, 1789) 45mm
28. *Coluzea spiralis* (A.Adams, 1856) 46mm
29. *Buccinulum linea* (Martyn, 1784) 32mm
30. *Austrofusus glans* (Röding, 1798) 51mm
31. *Cominella adspersa* (Bruguière, 1789) 48mm
32. *Penion sulcatus* (Lamarck, 1816) 83mm
33. *Alcithoe arabica* (Gmelin, 1791) 153mm
34. *Alcithoe larochei* Marwick, 1926, 118mm
35. *Alcithoe fusus fusus* (Quoy & Gaimard, 1833) 60mm
36. *Alcithoe lutea* (Watson, 1822) 71mm
37. *Glaphyrina caudata* (Quoy & Gaimard, 1833) 46mm
38. *Provocator mirabilis* (Finlay, 1926) 94mm
39. *Pareuthria campbelli* (Filhol, 1880) 28mm
40. *Mitra carbonaria* Swainson, 1822 28mm*
41. *Amalda australis* (G.B. Sowerby I, 1830) 28mm
42. *Amalda mucronata* (G.B.Sowerby I, 1830) 42mm
43. *Phenotoma rosea* (Quoy & Gaimard, 1833) 26mm
44. *Pupa kirki* (Hutton, 1873) 18mm
45. *Haminoea zelandiae* (Gray, 1843) 27mm
46. *Siphonaria australis* Quoy & Gaimard, 1833 22mm
47. *Amphibola crenata* (Gmelin, 1791) 25mm
48. *Benhamina obliquata* (G.B. Sowerby, 1825) 54mm
49. *Antalis nana* (Hutton, 1873) 40mm
50. *Fissidentalium zelandicum* (G.B. Sowerby, 1860) 56mm
51. *Chiton glaucus* Gray, 1828, 37mm
52. *Sypharochiton pelliserpentis* (Quoy & Gaimard, 1835) 31mm*
53. *Ischnochiton maorianus* Iredale, 1914, 34mm
54. *Solemya parkinsonii* E.A.Smith 1874, 36mm
55. *Barbatia novaezealandiae* (E.A.Smith, 1915) 48mm
56. *Glycymeris modesta* (Angas, 1879) 20mm
57. *Tucetona laticostata* (Quoy & Gaimard, 1835) 40mm
58. *Perna canaliculus* (Gmelin, 1791) 55mm
59. *Modiolus areolatus* (Gould, 1850) 53mm
60. *Zelithophaga truncata* (Gray, 1843) 34mm
61. *Aulacomya atra maoriana* (Iredale, 1915) 80mm
62. *Modiolarca impacta* (Hermann, 1782) 32mm
63. *Atrina zelandica* (Gray, 1835) 117mm



64. *Pecten novaezelandiae* Reeve, 1853, 110mm
65. *Mesopeplum convexum* (Quoy & Gaimard, 1835) 42mm
66. *Zygochlamys delicatula* (Hutton, 1873) 72mm*
67. *Talochlamys dichroa* (Suter, 1909) 40mm
68. *Talochlamys zelandiae* (Gray, 1843) 31mm
69. *Cardita aoteana* Finlay, 1926, 27mm
70. *Anomia trigonopsis* Hutton, 1877, 47mm
71. *Cyclomactra ovata* (Gray, 1843) 62mm
72. *Mactra murchisoni* Deshayes in Reeve, 1854, 60mm
73. *Macomona liliana* (Iredale, 1915) 42mm
74. *Peronaea gaimardi* (Iredale, 1915) 48mm
75. *Oxyperas elongata* (Quoy & Gaimard, 1835) 70mm
76. *Zenatia acinaces* (Quoy & Gaimard, 1835) 53mm
77. *Resania lanceolata* Gray, 1853, 72mm
78. *Paphies ventricosa* (Gray, 1843) 120mm
79. *Gari convexa* Reeve, 1857, 72mm
80. *Dosina crebra* (Hutton, 1873) 42mm
81. *Soletellina nitida* (Gray, 1843) 43mm
82. *Tawera spissa* (Deshayes, 1835) 22mm
83. *Bassina yatei* (Gray, 1835), 52mm
84. *Protothaca crassicosta* (Deshayes, 1835) 48mm
85. *Dosinia subrosea* (Gray, 1835) 48mm
86. *Notocallista multistriata* (G.B. Sowerby II, 1851) 21mm
87. *Myadora striata* (Quoy & Gaimard, 1835) 35mm
88. *Irus elegans* (Deshayes, 1854) 30mm, 88a, interior view
89. *Barnea similis* (Gray, 1835) 37mm, subadult, interior view
90. *Panopea zelandica* Quoy & Gaimard, 1835, 86mm
91. *Offadesma angasi* (Crosse & P. Fischer, 1864) 80mm*

***Kindly note: four species on this list are not endemic (marked with an asterisk (*), but were added as they are typical of New Zealand mollusks in my collection.**

**Photographs by my granddaughter Inbar Schneider.**



micros are quite beautiful in shape and sculpture, and have to be seen to be appreciated (a 2X to 10X lens helps). I personally collect micros as well as larger shells and have many in my collection.

The main purpose of this article is to draw attention to one of the unusual localities in which shells can be found and collected. It should be mentioned that the nearest neighbor to New Zealand is Australia to the west. In a survey I conducted of the shared taxa of the Southern Ocean, New Zealand shared 157 genera with Australia, owing mainly to the close proximity of the two countries. New Zealand also shared 95 genera with the Magellanic Region of South America, despite the tremendous distance currently between these two areas. The shared taxa may be partly accounted for by their relative close proximity in former geological eras, prior to extensive continental drift. The two regions have fairly similar climatic conditions, which is no doubt an additional factor. With South Africa, there are only some 40 shared genera. This is possibly accounted for by the fact that in geological times South Africa drifted further north from Antarctica, with the resulting warmer climatic conditions that affected the evolution of its mollusks.

Included here are some photos of a few of the New Zealand shells in my collection, some of which are perhaps not known to many collectors. I hope you enjoy the shells from this wonderful place as much as I do.

**References:**

**Spencer H.G., William R.C., Marshall B.A., & Murray T.J.** 2002. Checklist of the Recent Mollusca Described from the New Zealand Exclusive Economic Zone, University of Otago, Dunedin; Museum & Art galleries of the Northern Territory, Darwin; Museum of New Zealand Te Papa Tongarewa, Wellington, 116 pp.

**Morley, Margaret S.** 2004. Seashells of New Zealand, New Holland Publishers (NZ) Ltd., Auckland, 143 pp. Photographs by Iain A. Anderson.

**Orlin Z.** 2004. Distribution of Marine Molluscs along the Temperate and Cold Water Regions of the Southern Ocean and Adjoining Zones, American Conchologist 32(4) 21-23.

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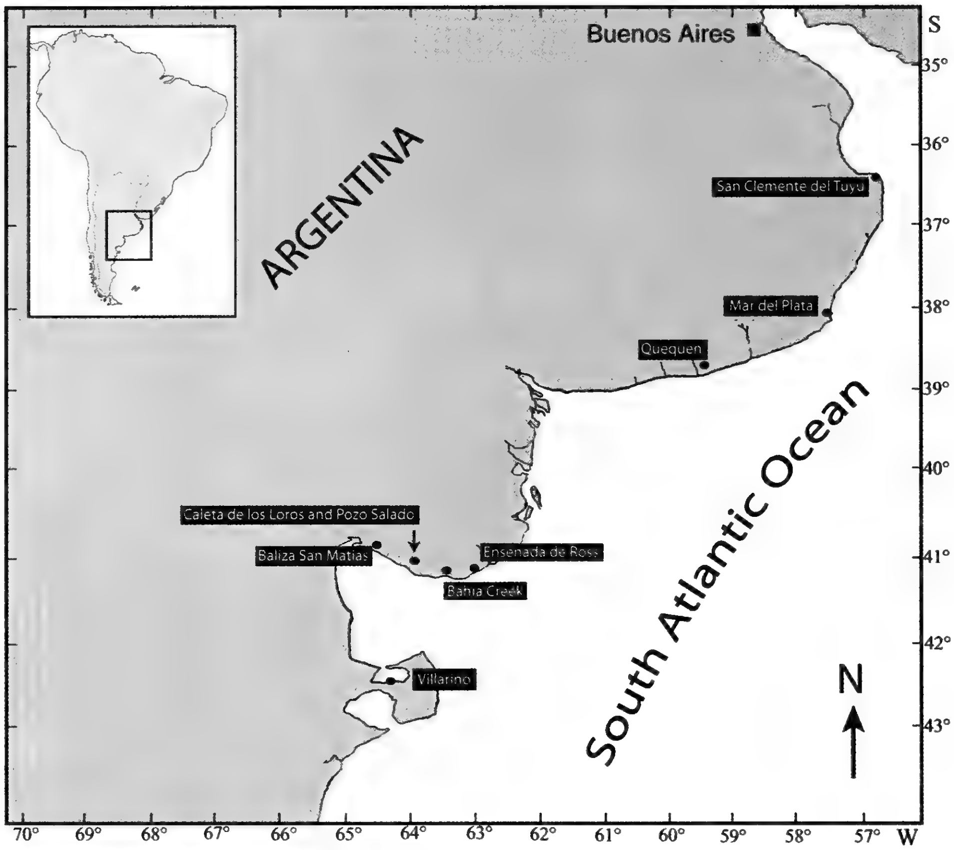
# Living Mactrid Bivalves from the Argentine Sea: visiting some of d'Orbigny's locations in northern Patagonia

By Javier H. Signorelli

**Traveling Through Argentina**




The worldwide family Mactridae Lamarck, 1809 is well represented in the Argentine Sea, but the systematic status of the different species from our latitudes is presently less than clear. Two biogeographical provinces are usually considered when talking about this area: 1. the Argentine Malacological Province, including the southern coasts of Brazil, Uruguay, and Argentina southward to northern Patagonia, and 2. the Magellanic Province from Patagonia south. The so-called Argentine Sea encompasses the portions of both provinces that are off the coast of Argentina to the edge of the continental shelf.

According to available literature there are records of at least 12 living species of mactrids in the Argentine Sea, with 7 of them living in the Argentine Malacological Province (Carcelles 1944, Castellanos 1970). The named species, however, greatly exceed that number.

In order to evaluate the status of the nominal taxa present in this area, fieldwork was accomplished in several locations of the Argentine Malacological Province, including localities visited by d'Orbigny in the XIX century. There are about forty nominal species described for the entire province and d'Orbigny carried out much of the early exploration.

The *Voyage dans l'Amerique Meridionale* was a South American expedition that allowed d'Orbigny to stay in our latitudes for seven years. When we analyzed his work, we decided that a visit to the same locations where d'Orbigny had collected material would be mandatory or at least appropriate for our research.

With this in mind, and joined by my friends Guido Pastorino, Miguel Griffin, and Diego Urteaga, we began our fieldwork. We left Buenos Aires and drove our van approximately 1,300km south to Villarino Beach at San José Gulf. This was the most southern sample station visited. The tidal amplitude is about 12 meters in this area (fig. 1A). A fishing boat took us to the middle of the gulf where we began collecting specimens. This place is close to a fishing village in the San José Gulf called Larralde Beach.

After Villarino, we started our trip back to the north. In Río Negro Province we took the coastal road that connects San Antonio Oeste with Viedma, stopping in several places visited by the French traveller d'Orbigny, including: Baliza San Matías, Pozo Salado, Caleta de los Loros (fig. 1C), Bahía Creek, and La Ensenada de Ross (fig. 1B), among others. At these stations we collected specimens from the intertidal zone as well as from the Quaternary deposits in the supratidal zone. We had traveled about 520km back towards our originating point when we arrived at Viedma, where the first part of our trip ended.

Some time later the second part began in Puerto Quequén in Buenos Aires Province, where there were a lot of fishing boats to help us obtain our samples. Mar del Plata was the next stop. This is a large tourist city located 400km to the south of Buenos Aires. The last station sampled was San Clemente del Tuyú (fig. 1D) at the southern end of San Borombóm Bay (Rio de la Plata estuary). All locations visited are in Table 1.

**Collecting Mactridae at Various Localities**

By scuba diving at 20 meters off Villarino Beach, we found specimens of *Mactra janeiroensis* Smith 1915 and *Darina solenoides* (King & Broderip 1832). The latter was much more abundant.

At Pozo Salado and Caleta de los Loros we encountered sea grass growing in sandy and muddy sediments. We also observed attractive and noisy flamingoes with very long legs. At Caleta de los Loros (fig. 1C) we found a very nice place to fish and rest, but our plans were different. At this station we collected numerous specimens of *Darina solenoides*. From Caleta de los Loros we traveled to Bahía Creek, where we found cliffs with Tertiary marine and continental deposits, however, there were no mactrid specimens. At La Ensenada de Ross we saw sandy beaches between cliffs formed by Tertiary and Quaternary deposits that contained specimens of *Mactra patagonica* d'Orbigny, 1846. This location is the one visited by d'Orbigny in the XIX century. *Mactra patagonica* appeared in the deposits with several genera of other bivalves like *Tivela* and *Amianatis,* and gastropods like *Olivancillaria* and *Buccinanops*, among others.

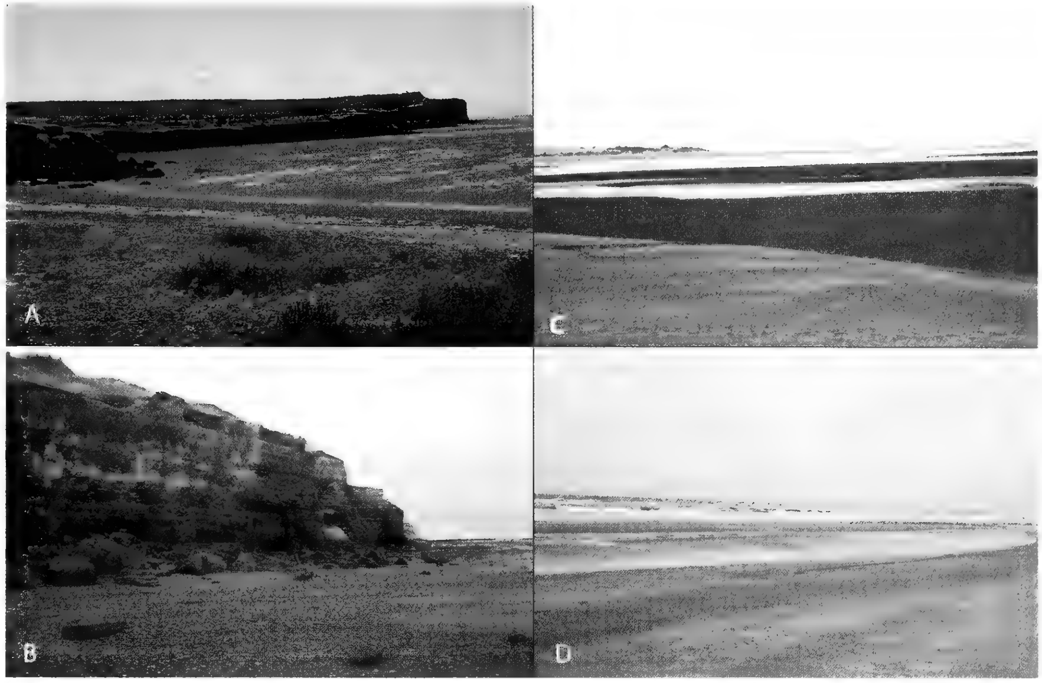



**Fig 1. Sample stations: A. Villarino Beach at Península Valdéz, B. La Ensenada de Ross in Rio Negro Province, C. Caleta de los Loros in Rio Negro Province, D. San Clemente del Tuyú in Buenos Aires Province. Photo by author.**

During the second portion of the fieldwork at the Buenos Aires localities, we collected specimens of *Mactra isabelleana* d'Orbigny, 1846 and *Mactra marplatensis* Doello-Jurado 1949. This gave us a total of five species found in the Argentine Biogeographical Province, a match with the species mentioned in the cited catalogs.

*Darina solenoides,* type species of the genus described by Gray (1853), appears from the Magellanic Region to the Buenos Aires coast. It presents a fragile and translucent rounded valve, with the posterior end open. The pallial sinus is deep and the hinge presents small lateral teeth close to the cardinals. In order to describe the hinge, we use the nomenclature developed by Bernard and Munier-Chalmas (according to Cox in Moore, 1969). By these criteria, the right valve has two cardinal teeth (3a & 3b). Two anterior (LAI & LAIII) and two posterior (LPI & LPIII) lateral teeth are present. In the left valve there is only one anterior and one posterior lateral tooth (LAII & LPII). They are similar and short. The inverted V-shaped cardinal tooth is formed by two cardinal teeth (2a & 2b), with the anterior one larger than the posterior one, which has an accessory lamella (4b). The chondrophore is larger in comparison with the size of the teeth as compared to other Argentine mactrids (fig. 3).

| Province | Locality | Latitude | Longitude |
|---|---|---|---|
| Buenos Aires | Río de la Plata Estuary | 35° 08' 28'' S | 56° 25' 37'' W |
| Buenos Aires | San Clemente del Tuyú | 36° 22' 52'' S | 56° 43' 30'' W |
| Buenos Aires | Mar del Plata | 37° 59' 56'' S | 57° 33' 26'' W |
| Buenos Aires | Quequén | 38° 32' 04'' S | 58° 41' 59'' W |
| Rio Negro | Baliza San Matías | 40° 49' 50'' S | 64° 43' 50'' W |
| Rio Negro | Pozo Salado | 41° 00' 53'' S | 64° 10' 01'' W |
| Rio Negro | Caleta de los Loros | 41° 01' 50'' S | 64° 06' 50'' W |
| Rio Negro | Bahía Creek | 41° 05' 10'' S | 63° 56' 01'' W |
| Rio Negro | Ensenada de Ross | 41° 09' 11'' S | 63° 21' 57'' W |
| Chubut | Villarino | 42° 23' 55'' S | 64° 17' 35'' W |

**Table 1. The 10 sites investigated in this study.**

The specimens of *Mactra janeiroensis* collected in San José gulf perfectly match the type material already analyzed. The shell is subtrigonal and has a brown periostracum. It is concentrically striated from the umbo area (fig. 3) to the lower half of the valves. The pallial sinus is rounded and larger in relation to shell size than found in other mactrids. A sharp keel running from the umbo to the posterior end defines a posterior area. The hinge is stronger than *Darina solenoides* and shows two anterior (LAI & LAIII) and two posterior (LAII & LPII) lateral teeth on the right valve. The cardinal teeth (3a & 3b) are similar in size. In the left valve, the posterior lateral tooth is more elongated than the anterior one. The accessory lamella (4b) runs parallel with the posterior cardinal tooth (2b), which with the anterior cardinal tooth (2a), forms the inverted V-shaped cardinal tooth. All specimens were sampled from 12 to 25 meters at low tide. The distribution of this species is cited from Surinam to Rio Negro Province in Argentina.

The last species sampled in northern Patagonia was *M. patagonica.* All specimens were taken from Quaternary deposits in the type locality visited by d'Orbigny. None was collected alive, but all matched the type material

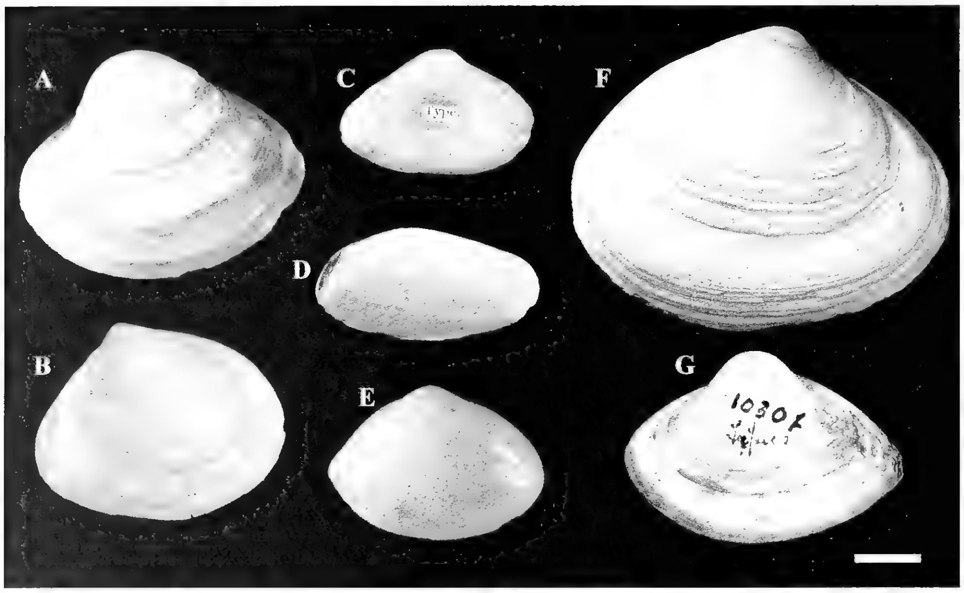
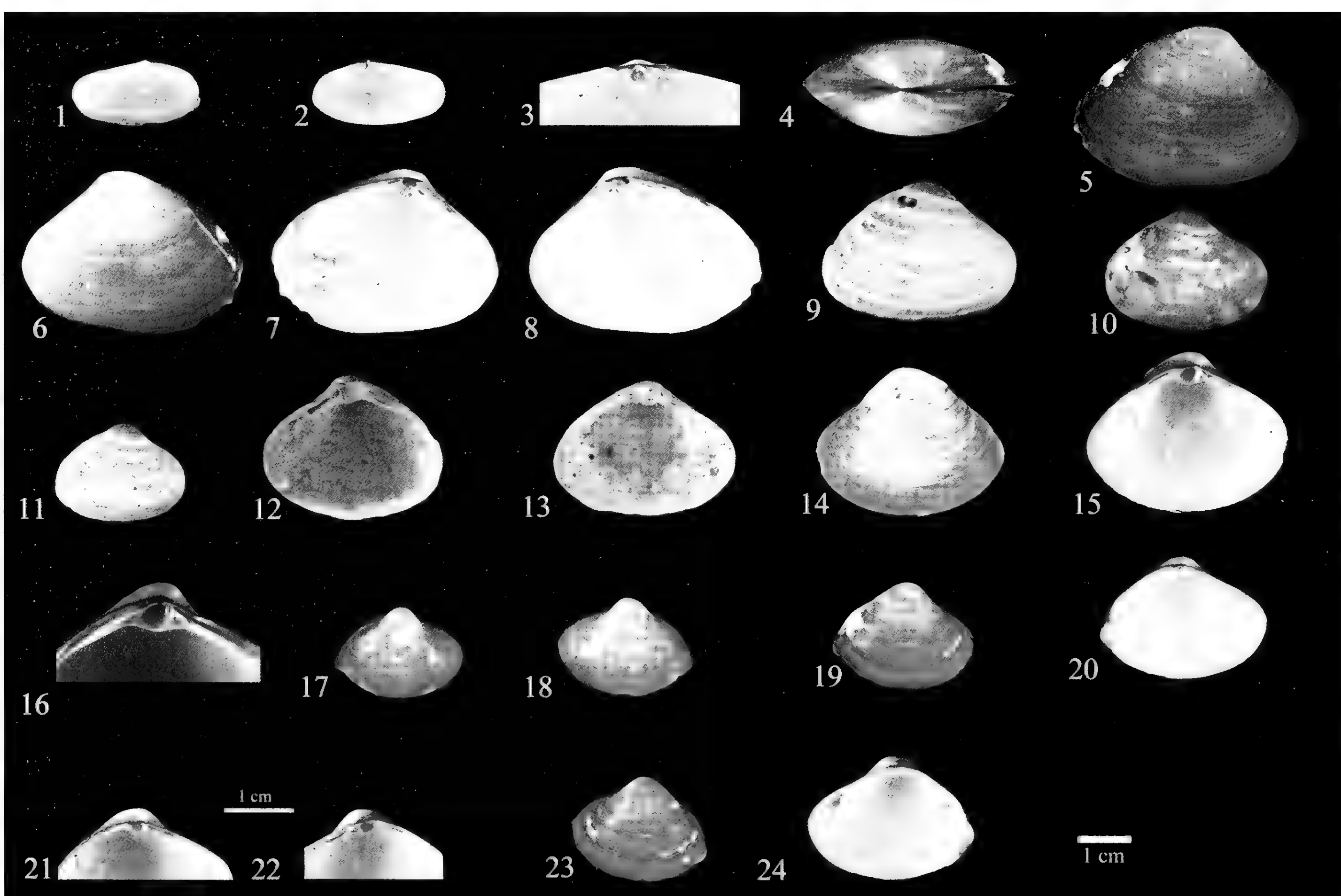



Fig. 2 (above). Type material of the cited species: A. *Mactra isabelleana* NHM-1854.12.4.667; B. *Raeta plicatella* MNHN- no number; C. *Mactra janeiroensis* NHM 1915.4.18.489-494; D. *Darina solenoides* NHM- 1859.9.19.59, 1837.12.1.879/884, and 1968.507; E. *Mactra petitii* NHM-1854.12.4.665; F. *Mactra patagonica* NHM-1854.12.4.668; G. *Mactra marplatensis* MACN-10307. Scale bar = 1cm.

Fig. 3: Specimens collected at the sample stations. 1-3, *Darina solenoides*. 4-8, *Mactra janeiroensis*. 9-13 *Mactra patagonica*. 14-16, *Mactra isabelleana*. 17-24 *Mactra marplatensis*. Scale bar = 1 cm. Both photos by author.

previously checked at the Natural History Museum (NHM), London. The shell is trigonal and very strong. The hinge, like other mactrids, presents the V-shape cardinal and robust lateral teeth. The striate sculpture typical of *M. janeiroensis* is not present in *M. patagonica* (Fig. 3). Neither the lunule nor the escutcheon is well defined. After the examination of several American colletions and the absence of live specimens in the field, this form could be considered exclusively Quaternary.

The distribution of *Mactra isabelleana* is from Río de Janeiro, Brazil, to San Matías Gulf in Argentina. All specimens were collected by fishermen with a trawling net at the three mentioned locations from the Buenos Aires coast, including the Río de la Plata estuary, where this species is particularly abundant. The shell is trigonal with a brownish periostracum. The pallial sinus is very small and the hinge matches the other species (fig. 3). This taxa lives in very dissimilar habitats and can be found in the open sea (Quequén and Mar del Plata) and in estuaries (Río de la Plata and San



Clemente del Tuyú). These results reveal two different forms that expose a great phenotypic plasticity in both environments. The marine morphotype is more elongated and larger than the estuarine. Both forms present conservative features, like the ultrastructure of the shell, hinge formula, periostracum, and soft parts.

The specimens of *Mactra marplatensis* were also collected by a trawling net, at the same locations of the Buenos Aires Province. It is more elongate than *Mactra isabelleana*, but it is smaller. In this species the escutcheon is very well defined and the hinge presents the same structure found in the other taxa, but is clearly more fragile (fig. 3).

All locations visited belong to the Argentine Malacological Province, where several authors have cited a total of seven species (Carcelles, 1944; Castellanos, 1970; Rios, 1994). Only five of these seven species were found in our collecting. *Raeta plicatella* (Lamarck, 1818) and *Mactra petitii* d'Orbigny, 1846 were the two species we were unable to collect.

After visiting the collections of local and foreign institutions (Museo Argentino de Ciencias Naturales [MACN] & Museo de La Plata in Argentina [MPA]; American Museum of Natural History [MNHN], Academy of Natural Science of Philadelphia [ANSP], and United States National Museum in USA [NHM]; and Museo Nacional de Rio de Janeiro [MNRJ] and Museo de Zoología de la Universidad de Sao Paulo in Brazil [MZSP]) the distribution of all cited species were checked. *Raeta plicatella* occurs from the coast of North Carolina in the USA to Northern Patagonia in Argentina. The distributions of *Mactra petitii* was extended to Argentina by Castellanos (1970) after he examined three lots housed at the Museo de La Plata (MLP N ° 2147; 1844 & 1859). In this context the actual distribution of *Mactra petitii* is still somewhat in question.

*Darina solenoides* is very common in muddy and sandy beaches in North Patagonia like Playa Fracaso (Valdés Peninsula, Chubut Province) and Caleta de los Loros (Rio Negro Province). This species appear to be the same as *Darina tenuis* Philippi, 1857 cited as occurring in the Magellanic area (Ihering, 1907). Other authors, like Lamy (1917), consider these species as two different forms. In my opinion, after checking the type material, I agree with Lamy, but the absence of rigorous fieldwork in the Magellanic area does not allow for a final decision. The main difference between *Darina solenoides* and *Darina tenuis* lies in the shape of the shell, with *Darina solenoides* having more rounded ends (fig. 3).

The specimens of *Mactra patagonica* d´Orbigny were found in the type locality visited by the author in the XIX century. This material corresponds to Quaternary deposits exposed in the supratidal zone. This species is very similar to *Mactra isabelleana*, but the shell is more inflated and stronger, and the posterior dorsal margin is rounded and curves downwards at the end.

*Mactra bonariensis* Philippi, 1893 was described from Tertiary deposits from the Entrerriense formation and was considered by Ihering (1907) as synonymous with *Mactra patagonica* Borchert 1901 (non d´Orbigny 1846). Therefore, *Mactra bonariensis* should not be cited as synonymous with *Mactra patagonica* d´Orbigny.

*Mactra isabelleana* and *Mactra marplatensis* were collected at the same sample stations, and both are valid species and very abundant in the estuarine area.

The status of the five species found was confirmed by comparison with the type material listed (Fig. 2). These names are available, however the synonymy list is, at the moment, under examination.

**Acknowledgments:**
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**Literature cited:**

**Borchert, A.** 1901. Die Molluskenfauna und das Alter der Parana-Stufe, In Beitrage zur Geologie und Paleontologie von Sudamerika, vol. 14 (ed. G. Steimann), pp. 171-245 (apartado 114: 175-178), Stuttgart: N. Jahrb. fur Mineralogie, Geologie und Paleontologie.

**Carcelles, A.** 1944. Catálogo de los moluscos marinos de Puerto Quequén, Revista del Museo de La Plata, 3, Zoología: 233-309.

**Castellanos, Z.** 1970. Catálogo de los moluscos marinos bonaerenses, Anales de la Comisión de Investigaciones Científicas de la provincia de Buenos Aires, 8: 9-65.

**Cox, L. R.** 1969. General features of Bivalvia, In Moore, R.C., ed., Treatise on Invertebrate Paleontology, Vol. N 6: 2-129.

**Doello-Jurado M.** 1949. Dos nuevas especies de bivalvos marinos, Comunicaciones Zoológicas del Museo de Historia Natural de Montevideo 3: 1-8

**Gray, J.E.** 1853. A revision of the genera of some of the families of conchifera or bivalve shells, Annals and Magazine of Natural History (2), 11(61), 33-44.

**Ihering, H.V.** 1907. Les Mollusques fossiles du Tertiaire et du Cretace superieur de l'Argentine, Anales del Museo Nacional de Buenos Aires, Serie III,(Tomo VII), 1-611.

**King P.P. & Broderip W.J.** 1832. Description of the Cirripedia, Conchifera and Mollusca in a collection formed by the officers of HMS Adventure and Beagle employed between the years 1826 and 1830 in surveying the southern coasts of South America, including the straits of Magalhaens and the coast of Tierra del Fuego, Zoological Journal 5: 332-349.

**Lamy, E.** 1917. Revision des Mactridae vivants du Museum d´Histoire Naturelle de Paris, Journal de Conchyliologie, 63: 173-423.

**Orbigny A.D. d.** 1834-1847. Mollusques, In: Bertrand CP (ed) Voyage dans l'Amerique Meridionale (Le Bresil, La Republique Orientale de L'Uruguay, La Republique Argentine, La Patagonie, La Republique du Chili, La Republique de Bolivia, La Republique du Perou), execute pendant les annees 1826, 1827, 1828, 1829, 1830, 1831, 1832 et 1833, Chez Ve. Levrault, Paris.

**Philippi, R.A.** 1893. Descripcion de algunos fósiles Terciarios de la Republica Argentina, Anales del Museo Nacional de Chile, Mineralogia, Geologia y Paleontologia, 1-15.

**Rios, E.C.** 1994. Seashells of Brazil, Rio Grande: Editora da Fundaçao Universidade do Rio Grande.

**Smith E.A.** 1915. Mollusca Part I-Gastropoda Prosobranchia, Scaphopoda and Pelecypoda, British Antarctic ("Terra Nova") Expedition, 1910. Natural History Report. Zoology, British Museum, London, pp. 61-112.

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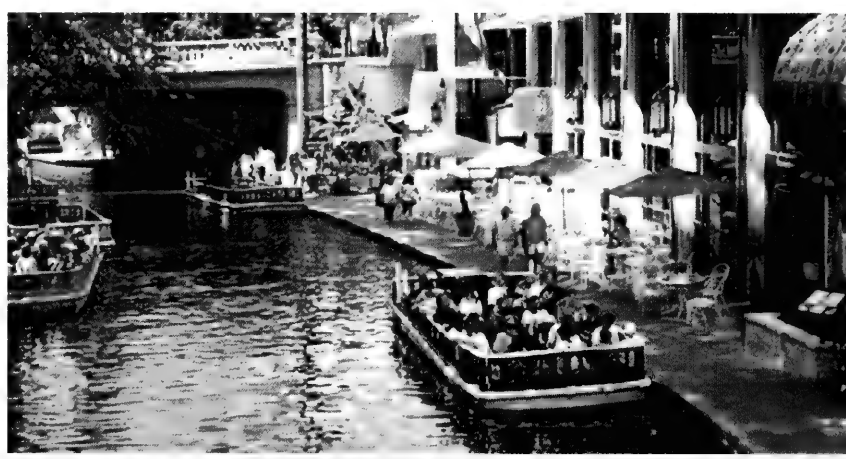
# COA Convention: 5-10 July 2008

**It's just around the corner. Now is the time to register and make plans to attend this once a year event. In addition to the Welcome Party Buffet, the Fiesta Banquet is also included in the registration fee. This issue has all of the forms and information, plus you can get them on line at:COA2008.ORG or the Conchologists of America website at: conchologistsofamerica.org**

The inserts in this issue should answer any of your questions, but just in case, feel free to contact any of the following:

Convention Co-Chairs:
Jean Dickman jayendee@sbcglobal.net
Wanda Coker shellman7000@sbcglobal.net
Bourse Chair:
Lucy Clampit lclampit@houston.rr.com
Phone - 713-468-0610
Auction Chair:
Dave Green dgreen@entouch.net
Registration Chair:
Patty & Wayne Humbird whumbird@earthlink.net

You do not want to miss this event - it promises to be a great convention. The hotel is superb and the locality of San Antonio is rich in history and loaded with interesting places to visit. There are almost a dozen field trips planned, and for those who want to stay close to the hotel, the River Walk makes for a nice evening stroll and has lots of great places to shop and eat.



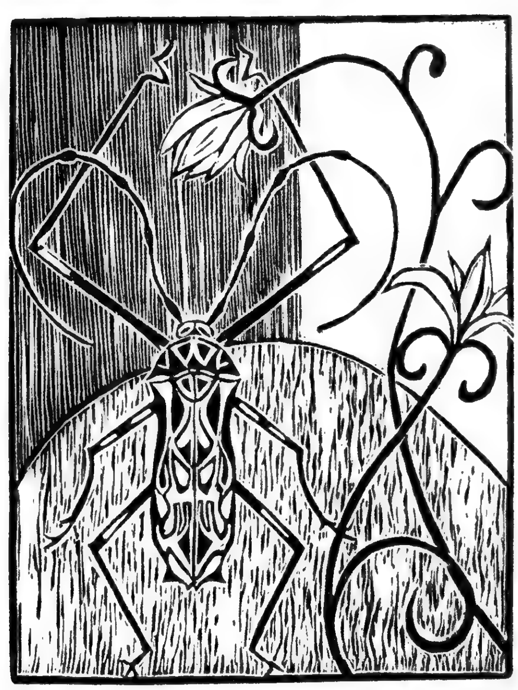
The Alamo is just blocks away. Did you know that when John Wayne filmed his "The Alamo" in 1960 (not to be confused with the more recent version with Billy Bob Thornton filmed in 2004), he originally looked at Panama as a location for the film. The Daughters of the Texas Revolution let him know that if it wasn't filmed in Texas he might as well plan on not showing it in Texas.

# The Art of COA Member Arline Reimann

Arline Reimann and her husband Hans are long-time members of COA and have been active in several different shell clubs between their professional lives in New Jersey and retirement in California. Arline comes from a family of artists and has been an artist for about as long as she has collected shells. She worked as a commercial artist while pursuing advanced degrees. She has had numerous exhibits all across the country, including two in New York, one in New Jersey, and one in Texas, in just the last year. Her art includes etchings, monotypes, lithographs, linocuts, and the sculpted mask featured on the back cover.

Arline continued to collect shells throughout her career while working in several museums and teaching marine biology, paleontology, and astronomy in community schools. She fondly remembers the first "decent" shells she collected while in high school in California, a pair of nearly perfect *Cypraea spadicea* Swainson, 1823 (the chestnut cowrie). Perhaps her best find was a beached wentletrap, *Cirsotrema dalli* Rehder, 1945, on Isla de Cabra, Puerto Rico. At present she donates time and shells at several local schools, while continuing to work at and exhibit her art.

**Clockwise from top right: a 6 x 6 inch pen & ink etching titled "Seashells," pen & ink of a longhorn beetle, and a pen & ink titled "Alpacas." Arline also has several other seashell themed paintings that were not available. The bacl cover is a life-sized mask created by Arline that features a marine theme.**



Vol. 36, No. 2, June 2008
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# American Conchologist



Quarterly Journal of the Conchologists of America, Inc.

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 36, No. 2** **June 2008**


In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***



**Visit the COA website: http://conchologistsofamerica.org. Subscribe to Conch-L, the COA listserver at: listserv@listserv.uga.edu Instructions for joining Conch-L are on the COA web site.**


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**BACK ISSUES** are available from Hank Foglino, Properties Director. Prices: prior to 1985, $3 each, 1985 to current, $5 each; postage extra.

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**Front cover:** ***Naticarius orientalis*** **(Gmelin, 1791), 25mm, photographed by Charles Rawlings off Olango Island, Philippines, in 45 feet of water. This almost unbelievably brightly colored mollusk has a non-descript shell that gives no hint at the colors found in the living animal. Naticids are active hunters and this one is apparently on the prowl. This is an uncommon species in the Philippines.**

**Back cover:** ***Cypraea (Blasicrura) alisonae*** **Burgess, 1983, 26mm, collected off Oahu, Hawaii. This Hawaiian cowrie was named by Burgess for his 13-year-old patient (see pg. 35), Dr. E. Alison Kay. It has since been determined to most probably be a form of** ***Cypraea (Blasicrura) teres pellucens*** **Melvill, 1888 (Lorenz. 2000. A Guide to Worldwide Cowries).**

**Editor's notes:**

I hope each of you reading this had a great time at the annual COA convention. This issue should come out just about the same time as we are returning from the San Antonio, Texas, COA convention. If you did not make the convention, then as we say in my part of the country, "qué lástima." Don't kid yourself that reading about the convention and buying shells off the Internet are in any way close to the experience of attending COA's annual soirée. Yes, travel expenses are increasing and hotels are never cheap, but it is money well spent. The more often you attend, the more you learn and the more you kindle an interest in aspects of conchology beyond having a colorful shell in a display cabinet. You will also get to know a fascinating group of people, all suffering from the same conchological affliction.

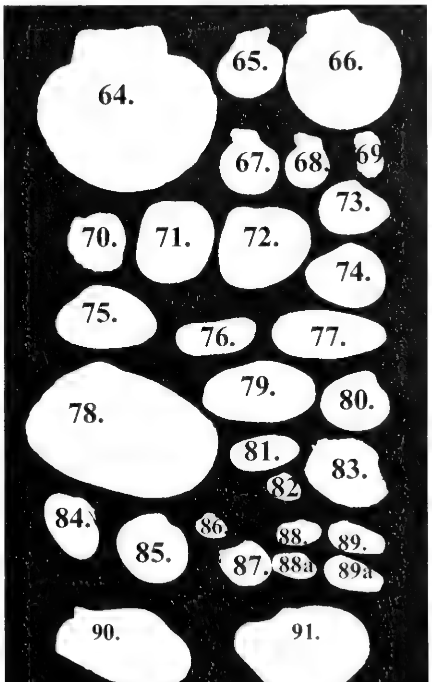
As usual, this issue has an eclectic offering with perhaps a bit more on land snails than is usual. Hopefully this will spark an interest and we can continue with some more coverage of the sometimes drab, sometimes colorful, but always interesting mollusks that have adapted to a life on land.

Thank you to all of our contributors, you truly make this magazine possible.

**Correction:**

In the last issue (March 2008), the article on page 31 on the art of Arline Reimann had errors in the captions. None of the images were pen and ink. The largest, "Seashells," is an etching. The image on the lower left is a linocut titled "Gazelles," while that on the lower right is a linocut titled "Acrocinus longimanus."

Also in the last issue, the third color plate in the article by Zvi Orlin on New Zealand shells (page 25) was missing the caption numbers. Several readers commented on this and that they were able to figure out what shell was what using position and the listed size, but just in case there is any question, here is a key to help with that plate.




Apologies to Zvi, Arline, and our readers.

# Frustrations and extensions IV: On two *Cyphoma* species from the Gulf of Mexico and six geographical extensions

**Emilio Fabián García**

**On two *Cyphoma* spp. from the Gulf of Mexico** - During my deepwater dredging in the Gulf of Mexico I collected very few empty shells of *Cyphoma* species, and only two alive. Four additional live specimens were collected off Louisiana by SCUBA-diving friends who, unfortunately, disposed of the animals without taking photos or noticing the living animal's color pattern. I will discuss here the two live specimens for which I have photos, in conjunction with available descriptions and photos of similar animals of described taxa. I intend this "discussion" to be read as if I were thinking out loud, since no conclusions have been reached. Its purpose is to draw attention by collectors in the field, so that perhaps future findings of live material, together with photographs and preservation of the animals, will elucidate the frustration encountered while trying to identify the two following Gulf of Mexico *Cyphoma*:

***Cyphoma cf. sedlaki* Cate, 1976** - When Cate described *Cyphoma sedlaki* he relied on Rod and Patricia Armes, of Fort Lauderdale, Florida, for the description of the animal. The Ames described it as follows: "...the animal seems to change the mantle pattern from irregular circle spots to solid line stripes, often exhibiting a mixture of both, though basically there always seem to be a combination of stripes at either end, and circular RINGED SPOTS [my capitals] centrally" (1976: 160). The black and white images that accompany the description (fig. 3; Cate's fig. 4c) show the striped pattern and the ringed circles; however, they do not mention the actual coloration.

When I dredged the live Louisiana specimen (fig. 1), a juvenile, I took its picture and let it go, assuming that it was a juvenile *Cyphoma mcgintyi* Pilsbry, 1939, as its mantle had the lavender spots characteristic of that species. It was not until I started culling my images at home a few weeks later that I realized the lavender spots had a defined dark ring around them. And I asked myself, are the rings diagnostic of a different species or is this a *Cyphoma mcgintyi* with ringed spots?

When Pilsbry first described the animal of *Cyphoma mcgintyi* he gave a very succinct description: "...mantle closely spotted" (1939: 108); however, when he and McGinty later re-described it they were much more thorough: "The living animal...is nearly white, closely dappled with dresden brown, or toward the mantle edge sepia spots, or in other individuals nearly black spots. These are round to shortly oval, some oblong. It differs from *C. gibbosa* by having solid spots, NOT RINGS [my capitals], on the mantle..." (1939:2-3). The authors did add that "in some individuals a few of the spots have light centers" but they obviously did not consider them as having rings. Pilsbry and McGinty did not examine the animals casually, but were "in large numbers examined alive." Jean Andrews reported *Cyphoma mcgintyi* as living in Texas. In her remarks she states that "several specimens of this animal with its cream body spotted with blackish dots and bars lived in an aquarium for months until they were consumed by a sea anemone" (1971: 99). Again, in a careful observation of the animals of *C. mcgintyi* for a period of time there was no mention of ringed spots.

*Cyphoma rhomba* Cate, 1978, is another species described as having lavender spots on its mantle. It is sympatric with *C. sedlaki* and *C. mcgintyi* in the Florida Keys. Cate describes the animal as "lavender over all. The mantle is decorated with fairly large dark lavender spots (similar in shape to those of *Cyphoma mcgintyi* Pilsbry, 1939" (1978: 165). Cate relies on William Chapman and Alfred Calabrese for "the pertinent details," presumably the description of the animal. Cate also states, among its distinctive characters, that *C. rhomba* "has generally a smaller shell than other species of the genus with the possible exception of the Eastern Pacific *Cyphoma emarginatum* (Sowerby I, 1830)"; however, although *C. sedlaki* can grow to 26.9mm (Rosenberg, 2005), its holotype measures only 15.5mm, while that of *C. rhomba* measures 22.7mm. The salient character of *C. rhomba*, compared to *C. mcgintyi*, seems to be the small size combined with its rhomboid shape. Cate does not show an image of the live animal.

Soo... what name should we give to the live Louisiana specimen, *Cyphoma mcgintyi*, *C. sedlaki*, or *C. rhomba*? IF the ringed spots are diagnostic for species differentiation then *C. mcgintyi* is out, and so is *C. rhomba* if Cate's description of the animal is accurate. Although *Cyphoma sedlaki* has a combination of stripes and spots, the "stripes" seem to be very elongated versions of the spots, and the original animal description does suggest that the pattern of the mantle is variable. Although some specimens of *C. mcgintyi* may have spots with a lighter colored center, I have not seen specimens with mixed markings, *i.e.*, with solid and ringed spots on the mantle of the same animal, nor have I seen this mix in *C. sedlaki*. And the *sequitur* is: has anyone ever seen a *Cyphoma gibbosum* without ringed spots?

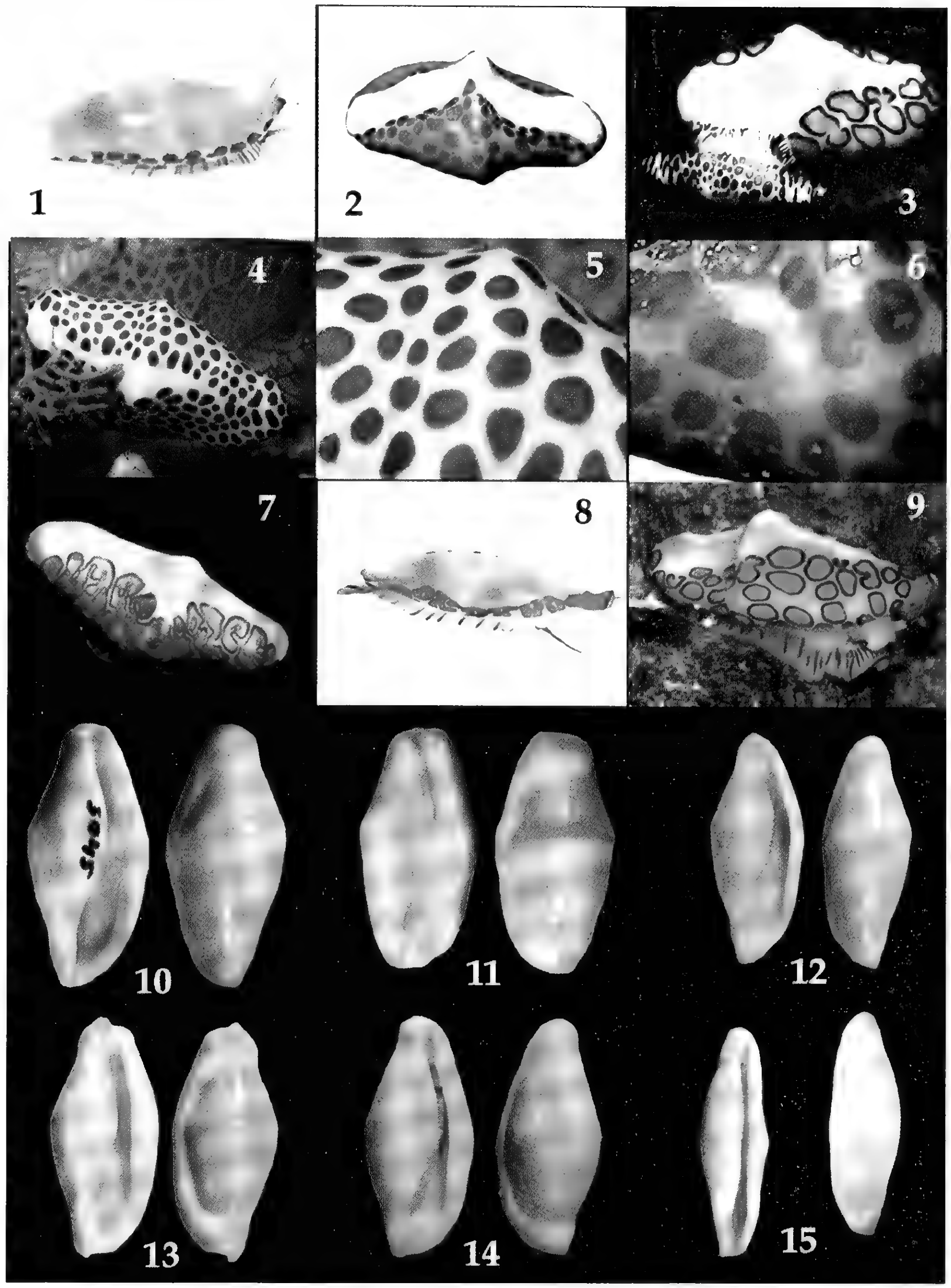
The Louisiana specimen has only the ringed spots without the stripes. These spots are very much like those shown in large portions of the mantle of a specimen of *C. sedlaki* pictured by Cate (fig. 3; Cate's fig. 4c). Moreover, while studying the collection of Robert L. Pace in Miami, Florida, he showed me *Cyphoma* from the Florida Keys with a preserved mantle. These specimens show precisely the ringed-spot pattern without the stripes shown by the Louisiana specimen (figs. 2, 6). It is not too far-fetched to suppose there may be populations of *C. sedlaki* with a mantle pattern that lacks the stripes, much like known specimens of *C. mcgintyi* that have only spots (figs. 4 & 5) or that include some "bars," as described by Andrews (above). Pace's specimen could be *C. rhomba* if the original description of the animal was inaccurate and the spots did have rings.

I have restricted this discussion to the pattern of the mantle because that is what I have available for the Louisiana specimen; moreover, the diagnostic differences in shell characters for the three taxa treated here are rather nebulous, as they seem to intergrade. Other than the mantle pattern, what seems to separate *C. mcgintyi*

from the other two taxa is that it can reach almost 40mm, while the maximum reported sizes for *C. sedlaki* and *C. rhomba* are 26.9mm and 22.7mm respectively (Rosenberg, 2005); however, that is a poor diagnostic character as shells of *C. sedlaki* and *C. mcgintyi* of the same size are known. Four adult shells from Louisiana, from the same lot, measure from 19 to 27.7mm (the largest in my Gulf collection). The smallest has shell features similar to those of *C. rhomba* (fig. 11), while the largest has the characters of *C. sedlaki* (fig. 10); and an adult specimen from Alabama measuring only 14.8mm (fig. 12) is relatively narrower than the others, but has the same general features as the shell of *C. sedlaki*. For comparative purposes I have added an interesting *Cyphoma* collected alive 112km west of St. Petersburg, Florida, in a lobster trap set in 67m. It is in the collection of Frank Frumar, of Kirkwood, Misouri, and was collected by his friend Steve Kern, a lobster fisherman.

My conclusions concerning the Louisiana specimen are firmly inconclusive. I am separating *Cyphoma sedlaki* from *C. mcgintyi*, based mainly on the ringed-spot pattern of the mantle of the former. I am not sure what the animal of "the real" *C. rhomba* would look like, even though I have seen many empty shells identified as such. It seems to me that if the animal of *C. rhomba* was accurately described and there are no ringed cells in the mantle pattern, this taxon might just be a junior synonym of *C. mcgintyi*. There is, however, the possibility that the rings were overlooked in the original description, in which case it would seem that *C. rhomba* is a junior synonym of C. *sedlaki*. Obviously, a more rigorous study of this complex is needed.

***Cyphoma alleneae*** **Cate, 1973 -** The live juvenile specimen I have identified as *Cyphoma alleneae* was dredged in Bahía de Campeche, southwestern Gulf of Mexico. Cate states in the original description that "the species is suggested only provisionally as it seems apparent that much work needs to be done in an effort to clarify the status of this and other members of the genus" (1973: 68). Many workers nowadays consider *C. alleneae* synonymous with *C. gibbosum* (fig. 9), because one can find specimens




**1.** ***Cyphoma*** **cf.** ***sedlaki*** **Cate, 1976, off Mississippi River delta, 28°48.09'N, 89°22.89'W, in 86m, juvenile. 2, 6.** ***Cyphoma cf. sedlaki*** **Cate, 1976, preserved animal, Robert L. Pace coll., Miami, Florida. 3.** ***Cyphoma sedlaki*** **Cate, 1976, Cate's original figure (fig. 4c). 4-5.** ***Cyphoma mcgintyi*** **Pilsbryi, 1939, photo courtesy of Kevan and Linda Sunderland, Sunrise, Florida. 7.** ***Cyphoma alleneae*** **Cate, 1973, Cate's original figure (fig. 155C). 8.** ***Cyphoma alleneae*** **Cate, 1973, Bahía de Campeche, Mexico, 22°06.78'N, 91°26.43'W, in 36-31m, juvenile, length 13.9mm. 9.** ***Cyphoma gibbosum*** **(Linnaeus, 1758), photo courtesy of Peggy Williams, Talevast, Florida. 10.** ***Cyphoma*** **sp., 65km south of Marsh Island, Louisiana, SCUBA in 27m, length 26.7mm, width 11.4mm. 11.** ***Cyphoma*** **sp., 40 miles south of Marsh Island, Louisiana, SCUBA in 27m; length 19.0mm, width 9.4mm. 12.** ***Cyphoma*** **sp., off Alabama, 29°24.43'N, 87°58.63'W, in 74-72m, length 14.8mm, width 6.0mm. 13.** ***Cyphoma*** **sp., Bahía de Campeche, Mexico, 22°20.00'N, 90°49.43'W, in 84-89m; length 19.6mm, width 9.3mm. 14.** ***Cyphoma*** **sp., Bahía de Campeche, Mexico, 21°51.32'N, 92°03.68'W, in 66-68m, length 19.1mm, width 8.8mm. 15.** ***Cyphoma*** **sp., 113km west of St. Petersburg, Florida, in 67m; in lobster trap, length 19mm, width 6.5mm, Frank Frumar coll, Kirkwood, Missouri.**

of *C. gibbosum* with a few distorted spots, resembling those of *C. alleneae*; however, when comparing Cate's original image of *C. alleneae* (fig. 7; Cate's fig. 155C) with that of the specimen from Campeche (fig. 8), and that of *C. gibbosum* (fig. 9), one wonders about this presumed synonymy.

Notwithstanding the aberration of some of the spots of *C. gibbosum*, those of *C. alleneae* have a much more vermiform shape, with some of them showing a "doughnut" design. Cate states that the mantle color pattern "is the most important distinguishing character" (1973:68); however, other than the color pattern of the mantle, the Campeche specimen also differs from *C. gibbosum* (fig. 9) in having a fully colored siphon and a shell dorsum that is milky-white with "a hint of pink," just as Cate described the holotype of *C. alleneae* (1973:67). The synonymy of *C. alleneae* with *C. gibbosum* may be perfectly correct but, again, these conclusions seem to warrant a closer look.

* * * * * * *

**On *Canalispira cf. lipei* García, 2007 (fig. 16) -** While looking through a batch of micromollusks dredged off the lower Florida Keys, I ran across specimens very similar to *Canalispira lipei* García, 2007, a species originally described from off Contoy Light, Yucatan, Mexico. These specimens, however, have three columellar plications instead of the four present in the type material; otherwise, they perfectly match the type material in shell characters and very unusual coloration (see García, 2007b:132). The specimens were dredged by Frank Frumar, of Kirkwood, Missouri, off Sand Key in 200m.

Faced with the puzzling incongruence of plication count, I decided to consult the well-known marginelliform worker Andrew Wakefield, of Buckhurst Hill, England. His reply was so interesting that I asked him for permission to quote it entirely (below):

"Your observation of an apparently missing plication in *Canalispira lipei* from the Florida Keys is very interesting. Unlike the family Marginellidae which has typical Neogastropod unmodified (i.e. unresorbed) internal whorls, the family Cystiscidae has a highly modified internal structure, where not only are the early whorls thinned sometimes to the extent of being almost removed, but the columellar plications thereon are also progressively reduced in size and thickness (see Coovert & Coovert, 1995). Both families contain genera in which the most posterior plication or plications are discontinuous, meaning that although they are evident aperturally they don't last more than a quarter to a half a turn or so within. In other words, they mimic true plications, which continue unseen up the columella within the shell. In our paper on *Canalispira* (McCleery & Wakefield, 2007) we state that the fourth plication is confined to the aperture only in all of the three species we describe. It is likely that far from being a true columellar plication, this 'fourth plication' is just a long parietal lira and therefore not a true plication at all! The three specimens of *C. lipei* you have found do lack an obvious 'fourth plication' although the photograph does show a slightly raised area on the columella in the position where we would expect it to be. It does however demonstrate that this character is variable in strength, and therefore somewhat unreliable as a diagnostic tool at genus level. Fortunately there are other shell characters upon which we can rely to define the genus.

"The question to ask is; do we have a range extension of *C. lipei* here or are we looking at yet another new species of *Canalispira*? Columellar morphology is usually highly important at the species level in the Marginellidae and it could be argued that the same applies in the Cystiscidae. The difference is consistent in the small sample studied and is sufficient to indicate that it is a new species – perhaps a sibling species of *C. lipei*.

"If, on the other hand, we think we have here a range extension of *C. lipei* we ought to consider the possible causes of the morphological difference between the two lots. Erosion of the 'false' fourth plication can be ruled out as a cause because although dead collected, the condition of the shells appears to be good, and due to their small size they are unlikely to have had their columella morphology modified by hermit crabs. The difference may be attributable to ecophenotypic effects (differences in depth, substrate, salinity, diet, etc). It is the classic lumping or splitting situation, and the answer to the question will only be arrived at by further studies. For now we can only arrive at a generalized conclusion that *Canalispira* is actually triplicate with a 'false' fourth plication, more correctly termed a discontinuous parietal lira, which may or may not be present. Therefore, I suggest that the specimens be labeled *C. cf. C. lipei* for the time being. When sufficient material becomes available, it might be a useful exercise to chip away at the lip of some of the specimens to study in more detail the nature of this 'false' fourth plication."

Perhaps technically I should not have included *Canalispira lipei* in this report, since its identification at this point is uncertain. I decided to include it with the hope that there may be more specimens of the Florida Keys form in museums or other collections that might shed more light on this matter.

**On *Calliostoma barbouri* Clench & Aguayo, 1946 (fig. 17) -** This species has been reported from western Florida, but no specimens, dead or alive, have been reported in the Gulf of Mexico west of Apalachicola. The adult specimen reported here was dredged alive on Sackett Bank, Lousiana, off the Mississippi River delta, 28°38.16'N, 89°33.19'W, in 60 - 70m, together with a smaller empty specimen. It is the westernmost occurrence reported for this species.

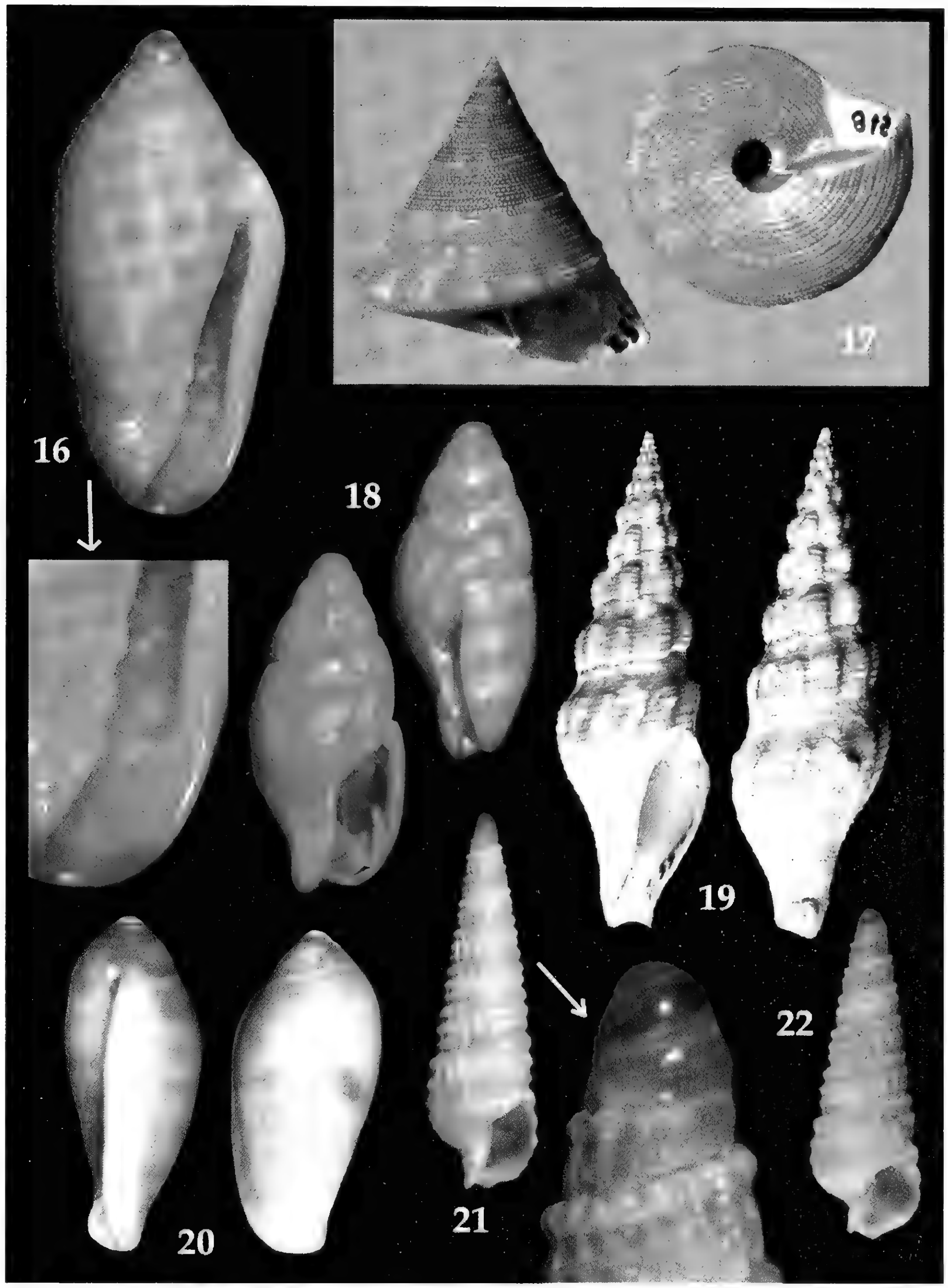
**On *Cosmioconcha nana* García, 2007 (fig. 18) -** This species seems to be rare, even in its own habitat. One specimen was collected off Louisiana in 2004, and two years later two more specimens were dredged off Louisiana. The fourth specimen, reported here, was dredged in 200m off Sand Key, lower Florida Keys, by Frank Frumar. It was discovered with *Canalispira cf. lipei* reported above.

**On *Hindsiclava rosenstielana* Tippett, 2007 (fig. 19) -** This deepwater turrid from off Colombia, South America, was recently described in *The Nautilus* (121(4):210-213). Upon checking my collection I discovered a specimen (EFG 5528) dredged in 1959 in the southwestern Gulf of Mexico, at 26° 53' N, 89°56'W, in 2650m; a second specimen had been deposited earlier in Harry G. Lee's collection, Jacksonville, Florida. After this discovery, while studying the collection of Kevan and Linda Sunderland in Sunrise, Florida, several more specimens from Cuba

and Honduras were discovered. This seems to be another of many species that are widespread but unreported because of the difficulties in collecting in their deepwater habitat.

**On *Volvarina aldeynzeri* Cossignani, 2006 (fig. 20) -** This species has been reported from Pompano Beach, eastern Florida, and has never been reported from the Gulf of Mexico. The single specimen in my collection (EFG 27904) was dredged in soft sediment off Louisiana at 28°06.78°N, 90°55.58°W, in 101-99m. The identification was confirmed by the author (personal communication).

**On *Terebra acrior* Dall, 1889 (figs. 21-22) -** This very interesting species is arguably the least known of the early-named western Atlantic *Terebra*. It was considered a "dubious species" by Bratcher & Cernohorsky in their monograph on Terebridae (1987: 229) and was not treated at all. It was not listed by Aubry (1984) or Terryn (2007) in their popular monographs. Its "rarity" is presumably due to its small size (8mm) and deepwater habitat, as the species is widely distributed, having been reported from the Florida Keys and Puerto Rico, to Barbados (Rosenberg, 2005). I recorded it from Bahía de Campeche in American Conchologist (2007a: 10, fig. 27), and later found two specimens from off Sand Key, lower Florida Keys, in the same group of micromollusks dredged by Frank Frumar and reported above in this article. A northern extension for this species was discovered last February, when Kevan and Linda Sunderland took me to visit Mr. Dieter Cosman, of *Chicoreus cosmani* fame, at his home in Fort Lauderdale. Mr. Cosman had been searching through deep-water sediment dredged off Fort Lauderdale, and invited me to look under the microscope at some micromollusks he had recently extracted. I was delighted to find the specimen figured here.




**16. *Canalispira* cf. *lipei* García, 2007, off Sand Key, lower Florida Keys, in 200m (EFG 28295). 17. *Calliostoma barbouri* Clench & Aguayo, 1946, Sackett Bank, Louisiana, 28°38.16'N, 89°33.19'W, in 60-70m; width 26mm (EFG 25218). 18. *Cosmioconcha nana* García, 2007, southwest of Sand Key, lower Florida Keys, in 135m; length 3.3mm (EFG 28309). 19. *Hindsiclava rosenstielana* Tippett, 2007, southeastern Gulf of Mexico, 26° 53'N, 89° 56'W, in 2650m, 54mm (EFG 5528). 20. *Volvarina aldeynzeri* Cossignani, 2006, 28°06.78'N; 90°55.58'W, in 101-99m; length 8.5mm (EFG 27904). 21. *Terebra acrior* Dall, 1889, off Sand Key, lower Florida Keys, in 135m; length 7.2mm (EFG 28313). 22. *Terebra acrior* Dall, 1889, off Fort Lauderdale, Florida, in 140 to 165m, length 4.7mm, Dieter Cosman coll., Fort Lauderdale, Florida.**

My thanks to Kevan and Linda Sunderland, Frank Frumar, Robert L. Pace, and Dieter Cosman for allowing me to inspect their specimens; to Peggy Williams, for providing the photo of *Cyphoma gibbosum* used in the plates; and to José Leal, Director, The Bailey- Matthews Shell Museum, and Lindsey Groves, Collections Manager, Natural History Museum of Los Angeles County for providing literature needed for the research of this article. I am thankful to Gary Rosenberg, Academy of Natural Sciences of Philadelphia, for commenting on the manuscript and for extended discussion and debate about *Cyphoma*, to Andrew Wakefield for allowing me to quote him extensively, and to Emily Vokes, Professor Emerita, Tulane University, for editing the manuscript.

REFERENCES

**Andrews, J**. 1971. Sea shells of the Texas coast. University of Texas Press, Austin, 365 pp.

**Aubry, U.** 1984. Terebridae. Umberto Aubry, Sorrento, Italy, 44 pp.

**Bratcher, T. & W. O. Cernohorsky.** 1987. Living Terebras of the World. American Malacologists, Melbourne, Florida, 240 pp.

**Cate, C. N.** 1973. A systematic revision of the Recent cypraeid family Ovulidae (Mollusca: Gastropoda). Veliger 15 (suppl.) 116 + [1] pp.

**Cate, C. N.** 1976. Five new species of Ovulidae. Veliger 19: 159-162

**Cate, C. N.** 1978. New species of Ovulidae and reinstatement of *Margovula pyrulina* (A. Adams, 1854) (Gastropoda). Nautilus 92: 160-167.

**Coovert, G. A. and H. K. Coovert.** 1995. Revision of the supraspecific classification of marginelliform gastropods. Nautilus 109: 43-110.

**García, E. F.** 2007a. Report on mollusks collected in a dredging expedition to Bahía de Campeche, southwestern Gulf of Mexico. American Conchologist 35(2): 4-11.

**García, E. F.** 2007b. Three new deep-water species of mollusks (Gastropoda: Calliostomatidae, Cystiscidae) from the southeastern Gulf of Mexico. Novapex 8 (3-4): 127-133.

**McCleery, T. & A. Wakefield.** 2008. A review of the enigmatic genus *Canalispira* Jousseaume, 1875 (Gastropoda: Cystiscidae) with the description of three new species from the western Atlantic. Novapex 8 (1): 1-10.

**Pilsbry, H. A.** 1939. *Cyphoma mcgintyi*, new species. Nautilus 52 108.

**Pilsbry, H. A. & T. L. McGinty.** 1939. The genus *Cyphoma* in Florida. Nautilus 53: 1-4

**Rosenberg, G.** 2005. Malacolog 4.1.0: A Database of Western Atlantic Marine Mollusca. [WWW database (version 4.1.0)] URL http://www.malacolog.org/

**Terryn, Y.** 2007. Terebridae: A collector's guide. Conchbooks, Germany, 57 pp.

**Tippett, D. L.** 2007. Two new gastropod species (Neogastropoda: Drilliidae, Turridae) from the western Atlantic Ocean. Nautilus 121(4): 210-213.



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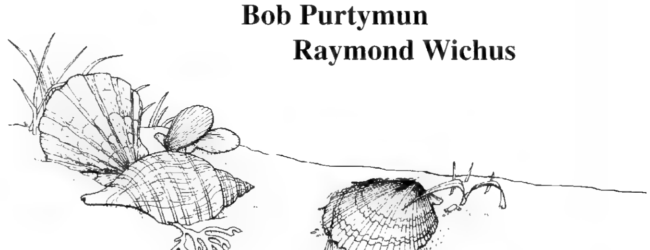
## In Memoriam:

**Bernice Albert**
**Bunnie Cook**
**Maurice "Moe" Goudzwaard**
**Ed Haviland**
**Dr. E. Alison Kay**
**Bob Purtymun**
**Raymond Wichus**




BISHOPS MILLS NATURAL HISTORY CENTRE

Ever since Fred Schueler was weaned from birds to leopard frogs in graduate school and Aleta Karstad was introduced to land snails at the National Museum of Canada, they've studied and publicized those groups of organisms that they believe are often encountered but seldom truly recognized by the public. They are especially interested in species whose status is rapidly changing, either the decline of native species, or the spreading of invasive species. From 1973 to 1990 they collected across Canada for the National Museum of Natural Sciences; since 1990 their work has been largely confined to Ontario.

The former Bishops Mills General Store building was purchased for them in 2002 to provide space for the safekeeping and use of natural history observations, and for research on, and collections of, amphibians, unionids, terrestrial gastropods, crayfish, and invasive plants. The BMNHC now holds the fourth largest collection of freshwater mussels in Canada, the files and land snail collections of the late F. Wayne Grimm, the carefully preserved streamside detritus of the Canadian Library of Drifted Material, plants, skeletons, fluid-preserved specimens, & frozen specimens "left over from" the dispersal of the collections of the Eastern Ontario Biodiversity Museum, and Fred & Aleta's library & archives. A large gallery upstairs displays Aleta's current artwork, and is available for community meetings or other functions. They publish TheNatureJournal(.ca) system for natural history field notes; their insufficiently updated website is http://pinicola.ca

# Massive death assemblage of *Cepaea nemoralis* (Linnaeus, 1758) (Mollusca, Helicidae) at the Pentecostal Culvert!

**By Frederick W. Schueler**
**Photographs by Aleta Karstad**

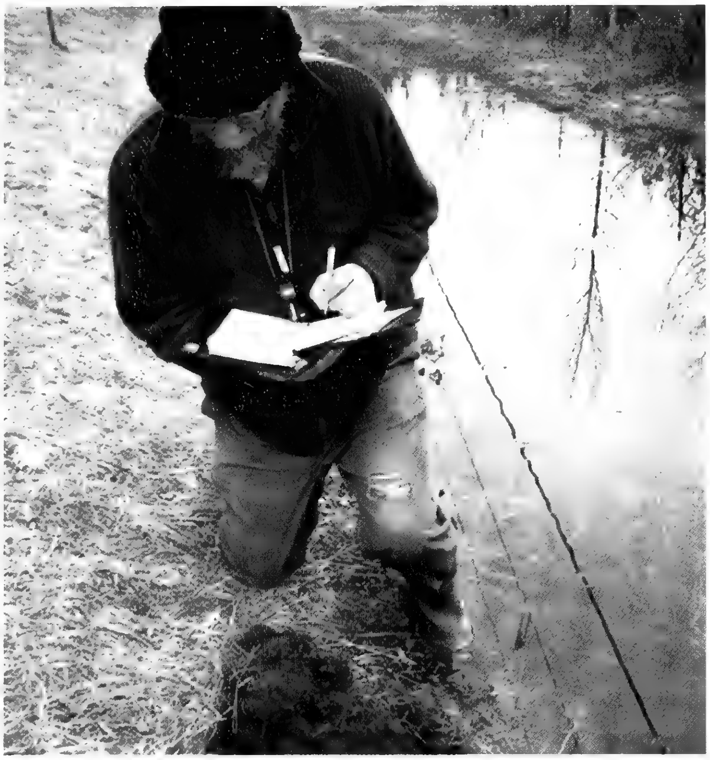
The helicid *Cepaea nemoralis* (Linnaeus, 1758) is sometimes called the "wood snail," but it is usually referred to by its scientific name. In a country where native land snails are mostly tiny, and range from grey to beige in color, these brilliantly pastel Easter egg-like wonders, 18 to 25mm in diameter when mature, fascinate everyone who's aware of them. The color pattern is highly variable, but it is usually yellow with five dark spiral bands. The shell may also have a background color of pink or brown, and there may be five, four, three, one, or no stripes. The species inhabits most of Europe and has been widely introduced in North America. It can presently be found from Massachusetts to California and from Tennessee to southern Ontario, Montreal, and the lower mainland and Okanagan area of British Columbia.

In Canada, it is probably spread via the roots of nursery stock from southwest Ontario, where it is often abundant. The habitat of *Cepaea nemoralis* ranges widely from woods to dunes, but in Ontario it is found mostly along the grassy edges of roadsides, fencerows, old fields, railway right-of-ways, and the margins of woods. Its diet consists mainly of dead plant material and it often seems especially abundant under Manitoba maples (*Acer negundo*) and tansy (*Tanacetum vulgare*). In Europe the banding and color patterns of the shell have been the subject of numerous studies and have been found to respond to so many selective influences that a major review study was called "Polymorphism in *Cepaea*: A Problem with Too Many Solutions?" (Jones et al., 1977) Many of these studies have compared the frequencies of color patterns of shells in piles beside stones used as anvils by thrushes to those in the surrounding population to demonstrate that common and easy-to-see banding and color patterns are disproportionately selected by the birds as prey.

*Cepaea nemoralis* never seems to cause problems for people and in Ontario it does not appear to displace any native snails, probably because no native snail shares its European roadside habitat. In places in southern Ontario where it is very abundant, it may process a significant fraction of dead vegetation. In turn, it is eaten by green frogs (*Rana clamitans*), leopard frogs (*R. pipiens*), bullfrogs (*R. catesbeiana*), and small mammals; although our robins have not learned to harvest it as the European *Turdus* have.

In my thoughtless youth, specifically 1981, I was fired up about the study of the ecological genetics of color variation, and I released a sample of 250 *Cepaea nemoralis*, from London, Ontario, under an apple tree in our back fields (44.87029° N 75.70044° W). We figured that since they were already present in Toronto and Ottawa, it was inevitable that they would "soon" occupy the rest of Ontario, and we might as well study their progress by giving them a head start in Bishops Mills. The snails we knew of in Ottawa all had a uniform "5-banded" pattern, but many of the snails from London had fewer bands, and we figured we could follow the evolution of the banding patterns as the new population adapted to its environment.

**Above: *Cepaea nemoralis* (Linnaeus, 1758) on Queen Anne's lace, Bishops Mills, Ontario, Canada, 15 October 2005.**
**Below: Several *C. nemoralis* foraging between rain showers, Bishops Mills, Ontario, Canada, 13 August 2004. Several color and pattern variations are evident in this photo.**



**On 7 April 2007, Fred digs into the side of a ditch and notes in his journal, "*I decided to pull up the grass along the metre of the bank where we'd found the most last year, but I only turned up a few dead shells along most of the metre. But when I got to a little notch in the shore where I'd found some dead shells last year, there were a lot of dead shells, and as I pulled them out and felt further in, there were yet more shells.*"**

**The hole in the ditch bank and some of the 669 *C. nemoralis* shells recovered by the author. All but five were empty shells. Fred's journal entry states, "*This certainly looks like the accumulated shells left by a predator — but which one and how does it get the snails out of the shell without breaking the shell? Blarina Shrews? Starnose Moles? Is the mortality somehow the result of the soil's being unfrozen all winter?*"**

In Ottawa, the populations (including the similar *C. hortensis*) had been introduced by over-enthusiastic naturalists, but since then, elsewhere in eastern Ontario, we've found only a few shells in stream-side drift in Brockville (in 1996, 2001, and 2007), indicating that Ontario east of Toronto is not going to be over-run by *Cepaea* any time soon.

Our barren old fields were favourable habitat, however, and the population grew, though it was 1996 before it had spread 150 metres to our house, and 2003 before they'd crossed St. Lawrence Street in front of the house, where they rapidly became abundant in the limestone flats of the barren shallow-soil roadside.

In our 2004-2006 study of animals active on the roads in Bishops Mills, we recorded *C. nemoralis* on the pavement 158 times, and counted 1,214 individuals, with many more (that did not come out on the pavement to be counted) on the roadside vegetation. There were peaks of activity in late May to early July, late August and early September, and then a movement to hibernation sites in late September or early October. Activity by a few individuals continued through the fall, with a few on the pavement even in the warm January of 2007.[1] That winter Ken and Janet Storey at Carleton[2] added *Cepaea nemoralis* to the roster of the animals that are able to withstand freezing of their tissues.

For several autumns I had been trying to find where our introduced *Cepaea* hibernate, and I led crews of shovel-wielders to depths of 70cm below cover objects beneath which the snails spend the summer, without finding any hibernating snails. On 11 March 2006 I got my first hint when I saw five adults on the sandy grass bank of the muddy vernal roadside ditch, which the *Cepaea* had reached in 2003. This is where the drainage from our fields flows under the raised embankment of St. Lawrence Street (44.87092° N 75.69964° W), diagonally across from the United Pentecostal Church.[3] Since they were out so early, they must have hibernated very close to the surface, and right where I found them.

In late October of 2006, we went to this same spot and tore up the deep flopped-over grass over a one-metre square. We brought a shovel to dig down towards snails, but what we found was about 20 live *C. nemoralis*, sealed with shining white epiphragms across their apertures, right on the surface among small mammal burrows and runways under the dense grass. Almost all were within 10-20cm of the level of the water in the ditch, and 0-40cm from the edge of the ditch. We then moved about one metre and tore up another area, but found only five hibernating snails. This suggested that the snails crawl down the 3m slope from the road to this particular place to hibernate. We also found a fair

1 The road study is reported at http://torontozoo.com/AdoptAPond/pdfs/r&e_Tues6.FSchueler.pdf (Cepaea starts on page 33)
2 http://http-server.carleton.ca/~kbstorey/
3 Enter the lat/long co-ordinates into Google Maps for a look at the sites mentioned.

number of empty shells, suggesting that many do not make it through the winter, perhaps due to freezing or predation.

In March 2007, we found 84 fresh unbroken empty shells in the two metres or so between the culvert and the sampled square metre. They seem to have died of something over the winter, and to have been washed down into the ditch or into lower parts of small mammal burrows. Some of them were on the bottom and floated up when the grass was disturbed, but only within 20cm of the edge of the water. It was as if they had tried to hibernate below what turned out to be the level of the water. There were no shells found anywhere else in the ditch, as if it may have been the clearing of the metre plot that 'released' these, or predisposed the ones higher on the slope to mortality. There were active small mammal burrows, two going straight down into the sandy soil like crayfish burrows, and with a bit of a "chimney" of soil around their tops.

In the winter of 2007-2008 the ground didn't freeze under the deepest snow cover we've had since we introduced the *C. nemoralis.* On 1 April 2008 the snow was still knee-deep along the roadside of the ditch, but when walking our feet punched right through to the bottom, as if there wasn't any significant ice on the ditch under the snow. The channel from the culvert across the ditch was open and flowing, and we found one mature *C. nemoralis* drowned among the grass, two metres from the roadside bank.

I was back a week later to see if any of the snails that hibernated right at the edge of the ditch were active. I found there was only about a 15cm band of damp grass along the water's edge, below a bank dusty and pale with road sand, so I didn't have much hope of seeing snails wandering around. I decided to pull up the grass along the metre of the bank where we'd found the most last year, but I only found a few dead shells.

When I got to a little notch in the shore where I'd found most of the dead shells last year, there were a lot of dead shells, and as I pulled them out and felt further in, there were yet more shells. By the time I had come to the end of two 30cm burrows, about 6cm in diameter, with a large central chamber of about 10cm packed full of shells, and a central burrow about 40cm into the bank, I had filled a 2 litre pail with 669 shells, of which all but five were dead and empty. All were *C. nemoralis*.

Some of these were in a slurry of mud, and some were pretty clean. Most were found above the water level of the ditch. Most were 5-banded (55%), or mid-banded (30%), while 13% were multiple-banded with 1-2 bands missing, and 1.5% (10) were unbanded; 2.1% of the banded shells had faint or pale bands. Approximately 66% were adults. The 34% of shells without mature aperture lips were all in one size class, probably representing snails in their second winter. Some had died before this winter, indicated by the roots of herbs growing into them.

This certainly looked like the accumulated shells left by a predator, but which one and how does it get the snails out of the shell without breaking the shell? *Blarina* shrews? *Condylura cristata* (starnose mole)? *Microtus* (vole)? *Sorex* (shrew)? *Peromyscus* (white-footed mouse)? Has most of the *C. nemoralis* population in this locality been eaten, so there will be far fewer snails here this summer? Is the mortality somehow the result of the soil's being unfrozen all winter? There are certainly a lot of small mammal burrows (potential predators) revealed as the winter-long heavy snow melts. We had lots of questions, but no answers.

The next day, 8 April 2008, I uncovered another dip in the bank a few metres north of this site with an open mammal trail for about 80cm up the bank with scattered shells, but no burrows or great masses of shells. There were a few shells floating on the surface of the water, a few scattered on the ground, and a scattering of shells under the grass at the water's edge. I searched under the grass at the water's edge in the ditch south of the culvert, where we have never found *C. nemoralis* before, and again did not find any. I then searched across the street and up the ditch on the other side, finding no shells. I tried poking into small mammal burrows at the water's edge and in the sod, but still no shells. We need to mark the shells of snails in the fall and see whether they live or die over the winter. I suspect that this winter there was extensive mortality due to the unfrozen ground giving subnivian predators unusual access to the hibernators.

**The final assortment of shells recovered from the hole in the ditch bank.**

*Cepaea nemoralis* is an interesting snail that has succeeded in colonizing a number of habitats and has extended its range across two continents. Its story in this part of Ontario has only partially been told. I will closely watch events to see how this small and seemingly innocuous snail fares in Bishops Mills.

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**References:**

**Abbott, R. T.** 1989. "Compendium of Landsnails," American Malacologists Inc., Melbourne, Florida, 240 pp.

**Jones, J.S., Leith, B.H., & Rawlings, P.** 1977. Polymorphism in *Cepaea*: A Problem with Too Many Solutions? *Annual Review of Ecology and Systematics*, 8:109-143.

# A Bit More on *Cepaea* Land Snails

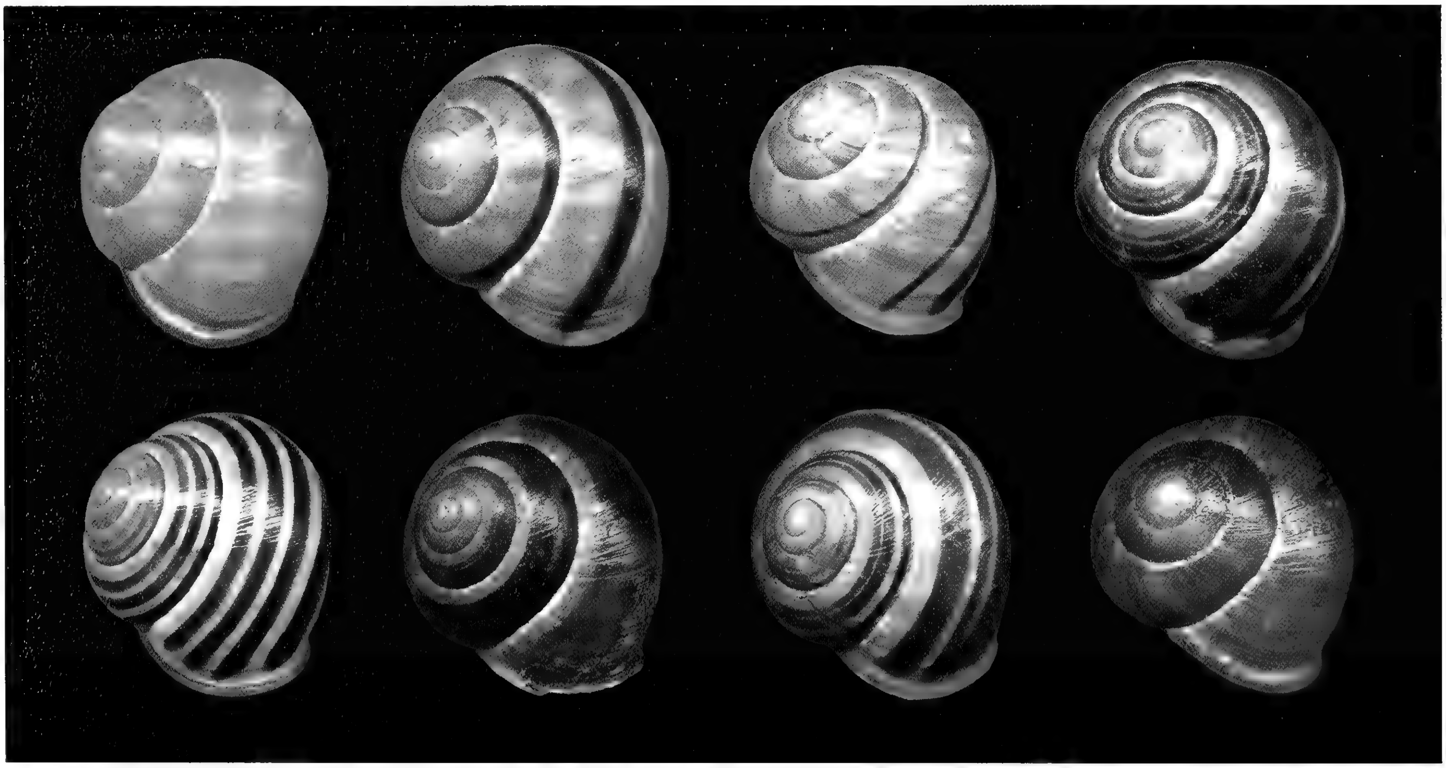
**Tom Eichhorst**

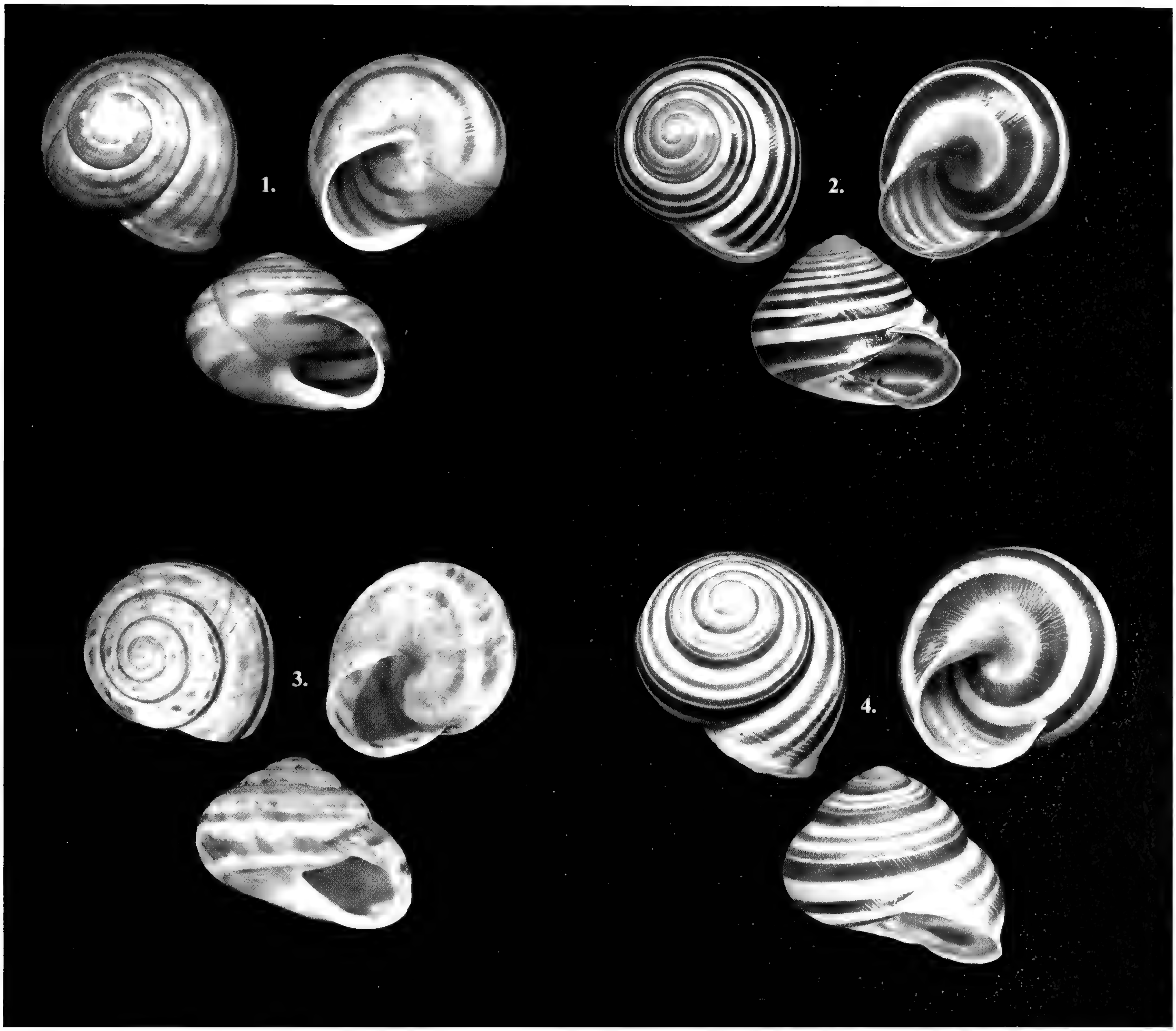
Abbott ("Compendium of Landsnails" 1989:189) lists 6 subfamilies with about 80 genera and "several thousand species" within the family Helicidae Rafinesque, 1815. Mollusks in this worldwide family are ground and bush-dwelling snails. Many of the species originated in Europe and countries around the Mediterranean, but have been introduced to other areas of the world, including North America and Australia. The common brown garden snail *Cornu aspersum* (Müller, 1774) (syn. *Helix aspersa*) is perhaps the best known member of this family.

The land snail genus *Cepaea* is in the subfamily Helicinae Rafinesque, 1815 (sometimes given family status) and the family Helicidae Rafinesque, 1815. The most commonly encountered species in the genus *Cepaea* are *Cepaea hortensis* (Müller, 1774) (called the white-lipped snail) and *Cepaea nemoralis* (Linnaeus, 1758) (called the wood, grove, or brown-lipped snail). These are similar in appearance and can often be found sharing the same habitat. They can be found throughout much of Europe and North America. A quick way to differentiate the two is the white lip of *Cepaea hortensis* as opposed to the brown lip of *C. nemoralis* (although some specimens of *Cepaea nemoralis* can have a light-colored, almost white lip). *Cepaea vindobonensis* (Férussac, 1821) also has a similar color and pattern (with a brown lip), but has a less intense color, a background color of white rather than yellow, and the shell has a definite axial structure of fine irregular ridges. *Cepaea sylvatica* (Drapanaud, 1801) is similar in coloring to *Cepaea vindobonensis* and is found in the Alps, usually above 1,200 feet elevation. It has a broken pattern along with one or two spiral stripes. *Cepaea hortensis* and *Cepaea nemoralis* seem to have the most variable pattern, with both species varying from solid yellow shells to shells with from one to five brown spiral stripes.

**Above: *Cepaea nemoralis* on bark substrate. Note that the lip of the shell is yellow rather than brown. This can cause confusion with the white-lipped *Cepaea hortensis*. The inner edge of the lip may be brown or may be the same yellow as is found on the outer edge, but it will not have the brilliant white normally found with *Cepaea hortensis*. Photo from Wikipedia.com.**

**Below: *Cepaea nemoralis* (20-21mm, Cornwall, U.K.) color and pattern variation from solid yellow to various numbers (up to five) of brown spiral stripes on background colors that range from yellow to light brown. Other (rare) color forms include solid red and solid white. Photo T. Eichhorst.**






Above: There are four species generally listed in the genus *Cepaea*:
1. *Cepaea hortensis* (Müller, 1774) - 20mm, shrubs, woods, and grassy areas of Europe and North America.
2. *Cepaea nemoralis* (Linnaeus, 1758) - 20mm, shrubs, woods, and grassy areas of Europe and North America.
3. *Cepaea sylvatica* (Drapanaud, 1801) - 19mm, mountain forests, meadows, and talus slopes of the Alps.
4. *Cepaea vindobonensis* (Férussac, 1821) - 21mm, shrubs, woods, and grassy areas of Eastern Europe.
Photo T. Eichhorst.

Right: *Cepaea hortensis* with a shell that can easily be mistaken for *Cepaea nemoralis*, unless the inside of the shell lip is examined to determine if it has the white color typical of this species. Photo from Wikipedia.com.

# 2008 SHELL SHOWS & RELATED EVENTS

**(July – December)**

**- Following information is subject to change. Please verify with individual organization -**

Jun 19-22 2008
**OREGON SHELL SHOW**, Portland, OR
Oregon Museum of Science & Industry,
1945 SE Water Ave.
Joyce Matthys, 1842 Woodstock Circle NW
Salem, OR 97304 Cell: (503) 871-1082
E-mail: joycematthys@aol.com

Jun 29-Jul 3 2008
**AMERIAN MALACOLOGICAL SOCIETY ANNUAL MEETING**,
Carbondale, IL
Southern Illinois University, Carbondale, IL
Dr. Frank E. Anderson, Depart of Zoology
Southern Illinois University, Carbondale,
IL 62901 (618) 453-4136
e-mail: feander@siu.edu

Jul. 6-10 2008
**CONCHOLOGISTS OF AMERICA ANNUAL CONVENTION,** San Antonio, Texas
Crowne Plaza Riverwalk Hotel, 111 Pecan Street East
Wanda Coker, 332 Banyan Street, Lake Jackson, TX 77566 (979) 297-0852
E-mail: shellman7000@sbglobal.net
Web site: www.conchologistsofamerica.org

Jul. 12-13 2008
**KEPPEL BAY SHELL SHOW,** Yeppoon, Queensland, Australia
Yeppoon Town Hall
Jean M. Offord, 277 McDougall St.,
N. Rockhampton, Qld. 4701, Australia
(7) 4928-3509

Jul. 19-20 2008
**TOWNSVILLE SHELL SHOW**,
Townsville, Queensland, Australia
Cutharinga Bowls Club on Harold Street, West End
Glenda Rowse, 19 Farrell Street
Kirwan 4814, Queensland, Australia
(7) 4773-2817

Aug. 15-17 2008
**JERSEY CAPE SHELL SHOW**, Stone Harbor, New Jersey
The Wetlands Institute, Stone Harbor
Karen Lelli (856) 691-5831
e-mail: kjlelli@comcast.net

Sept. 20-21 2008
**29th INTERNATIONAL SHELLS & FOSSIL BOURSE,** Ottmarsheim, France
Salle Polyvalente, Rue de la Priscine
Michel Rioual, 2 Rue des Vergers
68490 Ottmarsheim, France (3) 89-26-16-43

Sept. 25-28 2008
**NORTH CAROLINA SHELL SHOW,**
Wilmington, NC
Cape Fear Museum of History & Science
814 Market Street
Ann Buddenhagen, 618 Crabbery Lane
Raleigh, NC 27609 (919) 787-7103
E-mail: abuddenhagen@nc.rr.com

Sept. 27-28 2008
**ANNUAL GERMAN SHELL FAIR**,
Oehringen, Germany
KULTURA Hall, Herrenwiesenstr. 12
Kurt Kreipl, Hoehenweg
D-74613 Oehringen-Cappel, Germany
E-mail: meeresmuseum@t-online.de
Tel. (7941) 62-826, fax: (7941)2065

Oct. 11-12 2008
**PHILADELPHIA SHELL SHOW,**
Philadelphia, PA
Academy of Natural Sciences, Parkway & 19th St.
Al Schilling, 419 Linden Ave.
Glenside, PA 19038 (215) 886-5807
E-mail: alsch@bellatlantic.net

Oct. 25 2008
**BRITISH SHELL COLLECTORS' CLUB CONVENTION,** Essex, England
Theydon Boys Community Centre,
Theydon Boys, Epping, Essex
Tom Walker, 38 Redlands Road
Reading, Berkshire RG1 5HD, England
44 (118) 987-4294
E-mail: tom@tmwalker.co.uk

Oct. 25-26 2008
**12th PRAGUE INTERNATIONAL SHELL SHOW,** Prague, Czech Rep.
KULTURNI DUM LADVI Buresova 1661, Prague 8
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# Some Favorite Murex

## By Zvi Orlin

The family Muricidae is both bizarre in sculpture and often matchless in delicate design. The family contains more than 700 species and is renowned as one of the most distinctive and popular families among shell collectors. Interesting and often unusual feeding and reproductive adaptations accompany the bizarre and often fantastic shell sculpture that is so popular with collectors. As this is my favorite mollusk family, I occasionally fish some of the shells out of my collection and spend an evening of enjoyment just looking at them and appreciating their beauty and varied sculpture. I recently did just that and had my granddaughter photograph some of my specimens. As you look at these photographs, please keep in mind some of the features of Muricidae. They are ravenous predators, feeding mainly on barnacles, oysters and mussels. Their radulae have been intensively studied and are an important organ used in the classification of different species. Many muricids use their radulae to bore a cylindrical hole through the shell of intended prey and bring their proboscis in contact with the animal inside upon which they feed. Many also use an accessory boring organ that produces a substance that softens and loosens the surface of the victim's shell. Some species use their foot to pry open bivalves.

One of the often-noted features of the family is the secretion of the hypobranchial gland. This secretion, usually released in response to stress (rough handling or predator-prey conflicts), is at first greenish yellow, but turns blue and finally reddish purple in the presence of oxygen and light. This unusual product of some muricids was used to produce the Royal Tyrian Purple Dye, renowned for the permanence of its color. Because the process was time consuming and expensive, the resultant material was reserved for royalty and high-ranking church officials.

Murex shells are often adorned with delicate spines, frills, or webbing: the development and extent of which is often determined by environmental conditions. Shells growing in sheltered, protected waters usually have longer and more delicate spines than those from shallow water or exposed shores.

These recollections engendered my new project: a systematic division of my Muricidae collection into subfamilies. I hope this will help me to keep the different groups and their characteristics clearly in mind when looking over my collection. Here I illustrate the primary subfamilies with one or a few representative species of the major genera. I chose them mainly according to their scarcity (uncommon or not too well known) and sometimes by location. Some are also just classical examples of different muricid traits that have always fascinated me. For the division into subfamilies I used Roland Houart's book "Muricidae named since 1971."

I hope you will enjoy accompanying me on my journey through the world of the murex as you view the images of my shells. I hope you will not be too disappointed that I have omitted microshells from this article, as very few collectors really collect the smaller representatives of the shelled mollusk world. I actually have hundreds of microshells in my collection and enjoy them just as much as I do their larger brethren. I estimate most of you will find some species with which you are not familiar or perhaps even some genera that are not too well known. I wish you pleasant viewing!

**References:**

**Houart, Roland.** 1994. Illustrated catalogue of recent species of Muricidae named since 1971, English Book, Wiesbaden, Germany, pp. 178.

**Radwin, George E. & D'Attilio, Anthony.** 1976. Murex Shells of the World, Stanford Univ. Press, Stanford, CA, pp. 284.

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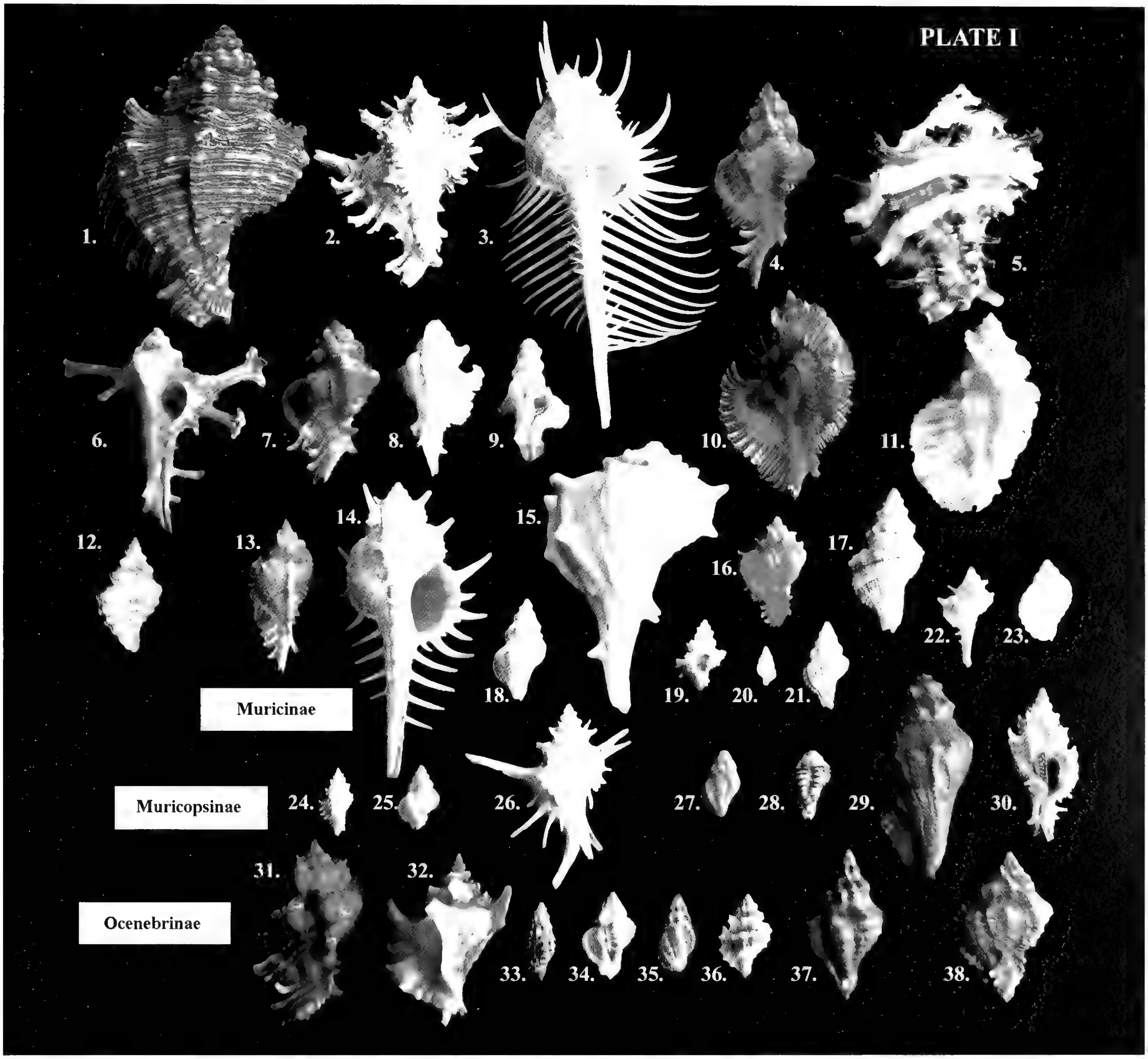
**PLATE I (all photos by my granddaughter, Inbar Schneider)**
**MURICINAE**
**1.** ***Phyllonotus margaritensis*** **(Abbott, 1958) 90mm Caribbean.**
**2.** ***Chicoreus bundharmai*** **Houart, 1992, 68mm Indonesia.**
**3.** ***Murex pecten*** **Lightfoot, 1786, 120mm W. Pacific.**
**4.** ***Siratus cf consuela*** **(A.H. Verrill, 1950) 66mm E. Caribbean.**
**5.** ***Hexaplex chicoreum*** **(Gmelin, 1791) 75mm E. Pacific.**
**6.** ***Homalocantha anomaliae*** **Kosuge, 1979, 56mm w/o, Philippines.**
**7.** ***Siratus motacilla*** **(Gmelin, 1791) 50mm West Indies.**
**8.** ***Purpurellus gambiensis*** **(Reeve, 1845) 45mm W. Africa.**
**9.** ***Marchia bipinnata*** **(Reeve, 1845) 45mm Indo-Pacific.**
**10.** ***Pterynotus loebbeckei miyokoae*** **Kosuge, 1979 64mm Philippines.**
**11.** ***Pterynotus loebbeckei loebbeckei*** **(Kobelt, 1879) 60mm W. Pacific.**
**12.** ***Paratrophon quoyi*** **(Reeve, 1854) 28mm New Zealand endemic.**
**13.** ***Naquetia annandalei*** **(Preston, 1910) 42mm Philippines.**
**14.** ***Murex carbonnieri*** **(Jousseaume, 1879) 80mm Red Sea, Egypt.**
**15.** ***Bolinus brandaris*** **(Linnaeus ,1758) 70mm Mediterranean, Israel.**
**16.** ***Chicomurex problematicus*** **Lan, 1981, 31mm Philippines.**
**17.** ***Lataxiena blosvillei*** **(Deshayes, 1832) 42mm Australia.**
**18.** ***Bedeva hanleyi*** **(Angas, 1867) 27mm Australia.**
**19.** ***Attiliosa nodulifera*** **(Sowerby, 1841) 19mm Philippines.**
**20.** ***Aspella acuticostata*** **(Turton, 1932) 11mm South Africa.**
**21.** ***Calotrophon ostrearum*** **(Conrad, 1846) 23mm Florida, USA.**
**22.** ***Haustellum dolichouros*** **Ponder & Vokes, 1988, 28mm Philippines.**
**23.** ***Paratrophon patens*** **(Hombron & Jacquinot, 1854) 21mm New Zealand endemic.**

**MURICOPSINAE.**
**24.** ***Murexiella leviculus*** **(Dall, 1889) 16mm Florida, USA.**
**25.** ***Favartia maculata*** **(Reeve, 1845) 18mm South Africa.**




26. *Poiriera zelandica* (Quoy & Gaimard, 1833) 48mm New Zealand.
27. *Muricopsis necocheana* (Pilsbry, 1900) 18mm Argentina.
28. *Maxwellia gemma* (Sowerby, 1879) 19mm California, USA.
29. *Vitularia salebrosa* (King & Broderip, 1832) 55mm E. Pacific.
30. *Muricopsis octogonus* (Quoy & Gaimard, 1833) 47mm w/o, New Zealand.

OCENEBRINAE.
31. *Pteropurpura vokesae* Emerson, 1964, 44mm California, USA.
32. *Pteropurpura adunca* (Sowerby, 1834) 42mm Japan.
33. *Trachypollia nodulosa* (C.B. Adams, 1845) 18mm Cape Verde Islands.
34. *Ocenebra inermicosta* (E.H.Vokes, 1964) 22mm Senegal.
35. *Ocinebrina edwardsii* (Payraudeau, 1826) 19mm Mediterranean, Israel.
36. *Eupleura nitida* (Broderip, 1833) 21mm Panama.
37. *Urosalpinx haneti* (Petit, 1856) 36mm Brazil.
38. *Xanthochorus xanthostoma* (Broderip, 1833) 37mm E. Pacific.

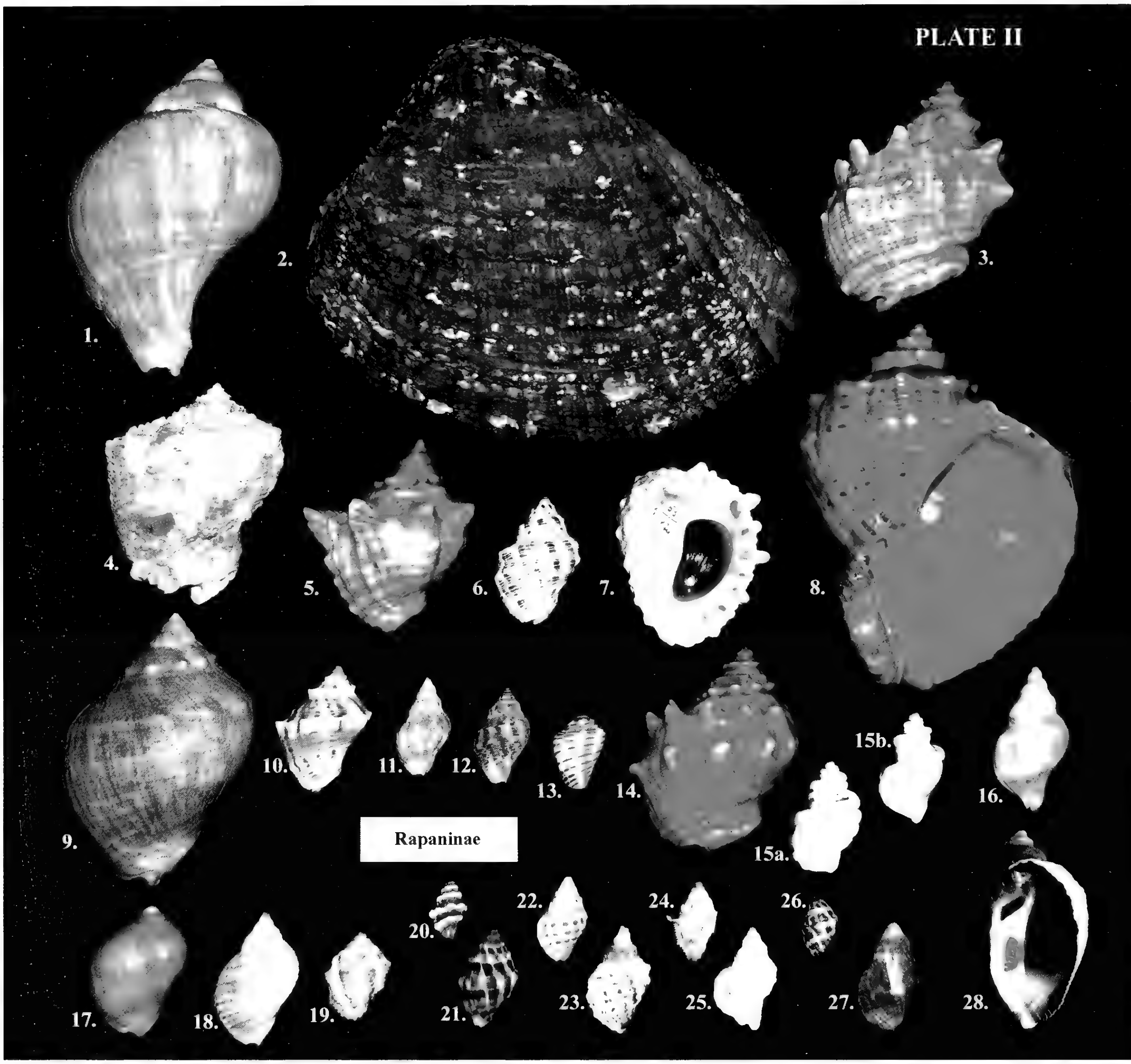



PLATE II RAPANINAE (following page)
1. *Chorus giganteus* (Lesson, 1830) 92mm Chile.
2. *Concholepas concholepas* (Bruguière, 1789) 140mm Chile.
3. *Stramonita haemastoma fm. canaliculata* (Gray, 1839) 73mm Gulf of Mexico, USA.
4. *Rapana bezoar* (Linnaeus, 1758) 62mm Vietnam.
5. *Stramonita haemastoma fm. consul* (Linnaeus, 1767) 50mm East Atlantic.
6. *Thais bitubercularis* (Lamarck, 1822) 32mm Malaysia.
7. *Purpura aperta* (Blainville, 1832) 45mm w/o, Hawaii endemic.
8. *Rapana venosa* (Valenciennes, 1846) 95mm Black Sea, Bulgaria.
9. *Thais chocolata* (Duclos, 1832) 65mm Chile.
10. *Stramonita gradata* (Jonas, 1846) 35mm Indo-Pacific.
11. *Agnewi tritoniformis* (Blainville, 1832) 26mm New Zealand.
12. *Stramonita rustica* (Lamarck, 1822) 32mm Malaysia.
13. *Pinaxia coronata* (A. Adams, 1851) 20mm Indonesia.
14. *Neorapana tuberculata* (Sowerby, 1835) 55mm E. Pacific.
15. *Nucella cingulata* (Linnaeus, 1758) 28mm South Africa.
16. *Nucella wahlbergi* (Krauss, 1848) 35mm South Africa, endemic.
17. *Acanthina monodon* (Pallas, 1774) 31mm Chile.
18. *Acanthina monodon var. imbricata* (Pallas, 1774) 32mm Chile.
19. *Morula chrysostoma* (Deshayes, 1844) 22mm Red Sea, Egypt.
20. *Morula dumosa* (Conrad, 1837) 15mm Sri Lanka.
21. *Morula musiva* (Kiener, 1835) 25mm Indo-Pacific.
22. *Drupella fragrum* Blainville, 1832, 22mm Philippines.
23. *Lepsiella scobina* (Quoy & Gaimard, 1833) 28mm New Zealand, endemic.
24. *Habromorula andrewsi* (E.A.Smith, 1909) 20mm S. Africa.
25. *Crassilabrum crassilabrum* Sowerby, 1834, 25mm Chile.
26. *Habromorula biconica* (Blainville, 1832) 16mm South Africa.
27. *Neothais harpa* (Conrad, 1837) 26mm Hawaii, endemic.
28. *Haustrum haustorium* (Gmelin, 1791) 52mm w/o, New Zealand.

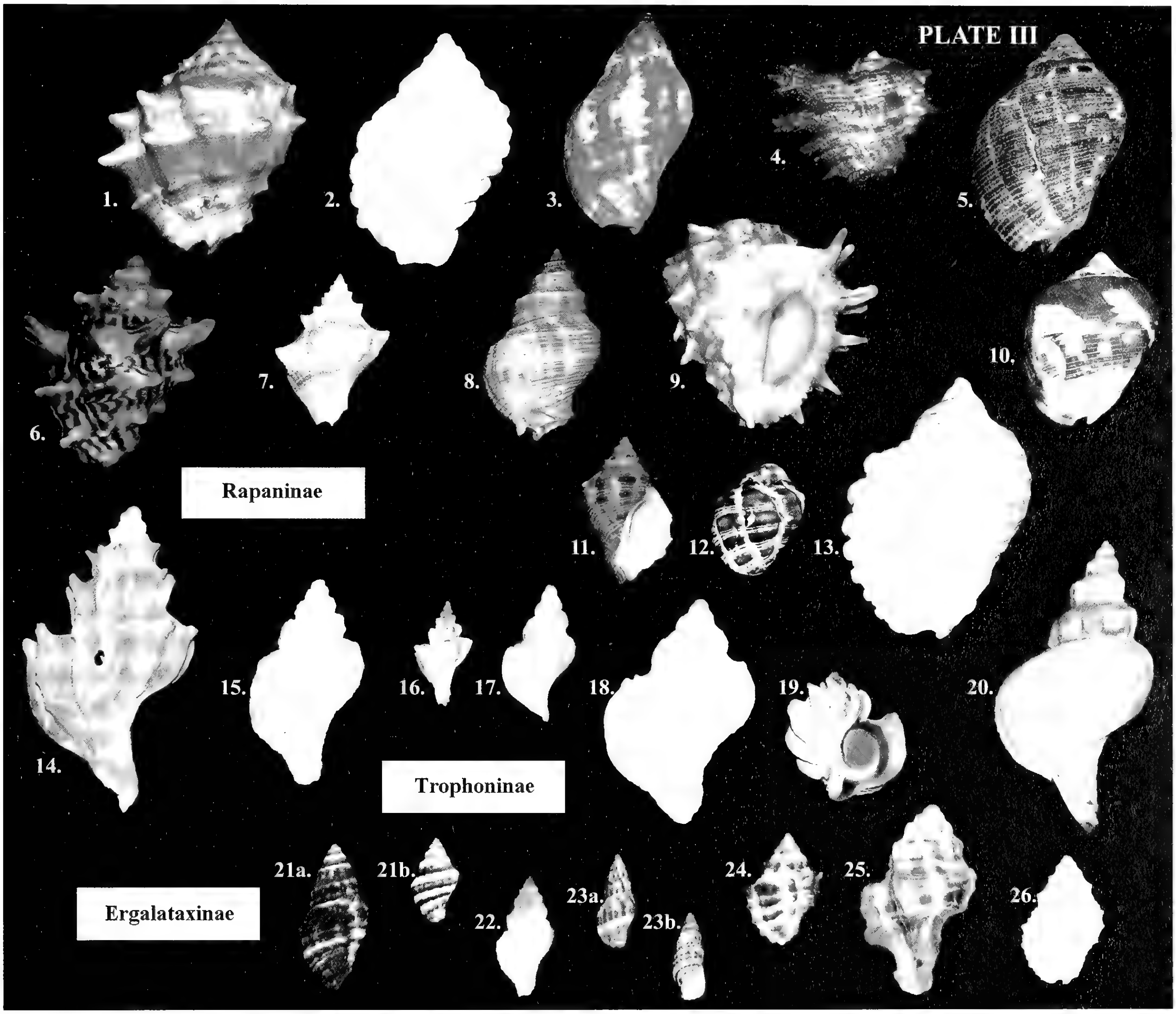



PLATE III. RAPANINAE.
1. *Mancinella alouina* (Roding, 1798) 43mm South Africa.
2. *Lepsithais lacunosa* (Bruguière, 1789) 44mm New Zealand.
3. *Nassa situla* (Reeve, 1846) 43mm Red Sea, Egypt.
4. *Drupa lobata* (Blainville, 1832) 28mm Indian Ocean.
5. *Purpura panama* (Röding, 1798) 45mm Oman.
6. *Thais aculeata* Deshayes, 1844, 40mm Indo-Pacific.
7. *Thais kiosquiformis* (Duclos, 1832) 30mm Panama.
8. *Thais mariae* Morretes, 1938, 36mm Brazil.
9. *Drupa rubusidaeus* Röding, 1798, 40mm w/o, Indo-Pacific.
10. *Thais melones* (Duclos, 1832) 35mm Panama.
11. *Thais sacellum* (Gmelin, 1791) 26mm w/o, Sri Lanka.
12. *Thais virgata* (Dillwyn, 1817) 20mm Vietnam.
13. *Dicathais orbita* (Gmelin, 1791) 48mm New Zealand.

TROPHONINAE.
14. *Trophon bahamondei* Mclean & Andrade, 1982, 52mm Chile.
15. *Xymene ambiguus* (female) (Philippi, 1844) 35mm New Zealand endemic (see 20 below).
16. *Trophon pelseneeri* (E.A.Smith, 1915) 18mm Uruguay.
17. *Trophon clathratus* (Linnaeus, 1767) 24mm Iceland.
18. *Trophon geversianus* (Pallas, 1774) 40mm S. Argentina.
19. *Trophon geversianus var. lamellosa* Castellanos, 1993, 27mm w/o, S. Argentina.
20. *Xymene ambiguus* (male) (Philippi, 1844) 51mm New Zealand, endemic. Note the difference between male and female (no. 15). The smaller female, with a slender lattice-sculptured shell, deposits eggs on the back of the broader and smoother male shell (Powell, "New Zealand Mollusca," 1979).

ERGALATAXINAE
21. *Ergalatax margariticola* (Broderip, 1837) a. adult 25mm, b. juvenile 15mm Philippines.
22. *Orania fusulus* (Brocchi, 1814) 21mm Mediterranean, Spain.
23. *Maculotriton serriale* (Deshayes, 1834) 16mm Red Sea, Egypt.
24. *Ergalatax obscura* Houart, 1996, 19mm Red Sea, Egypt, endemic.
25. *Muricodrupa fenestrata* (Blainville, 1832) 32mm Red Sea, Egypt.
26. *Cronia ochrostoma* (Blainville, 1832) 22mm South Africa.

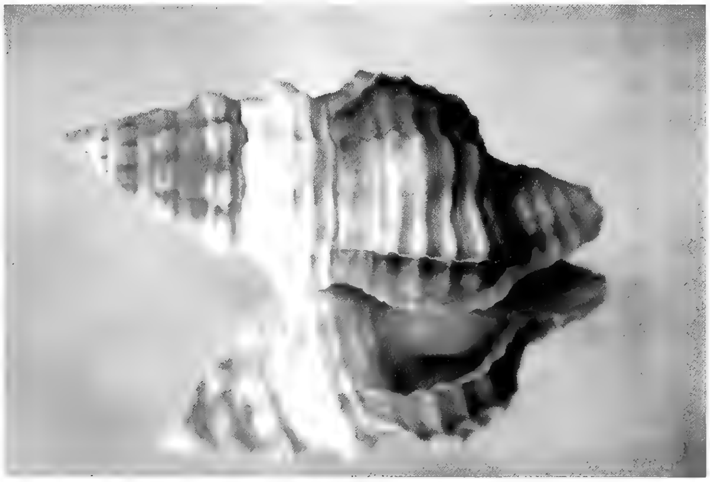
# *Latirus* of Roatan

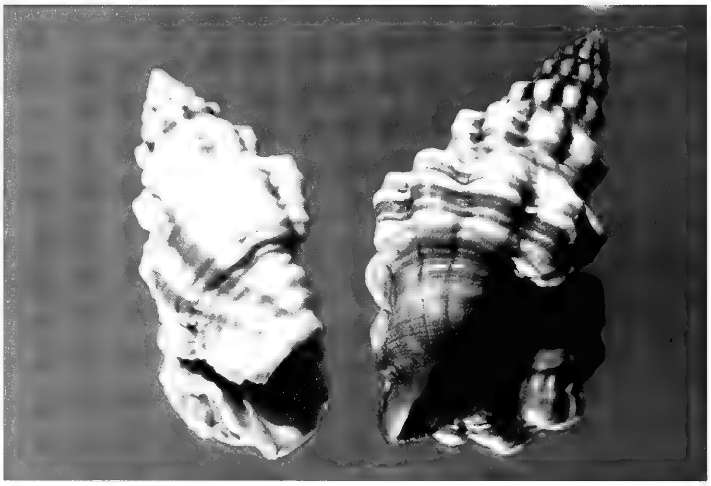
## Ted Kalafut

In my younger years I was fortunate enough to explore the beautiful land, meet the friendly people, and enjoy the fantastic diving afforded by Roatan Island off the coast of Honduras. My friend Tyll Sass and I shared our first exploratory trip there in the early 1980s and discovered wonderful unspoiled reefs in the incredibly clear Caribbean water. We also discovered a new world of shelling.

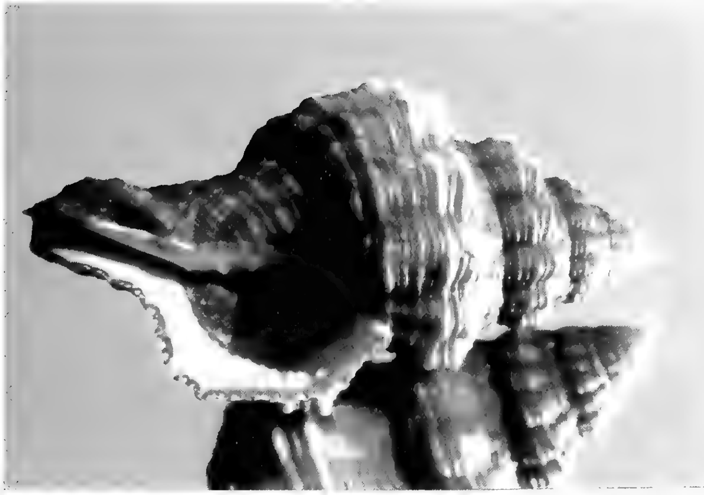
Among the many interesting families of shells we found were the Fasciolariidae and especially the genus *Latirus*. Some, like *Latirus cariniferus* (Lamarck, 1816) were very recognizable, but now and then we would come across a few shells that I definitely did not recognize. I was the shell collector on these trips and felt quite knowledgeable in this area, but some of these were stumpers. After many trips to Roatan over the years, the shells were traded or buried deep in a cabinet drawer. I never did get around to identifying many of them, but I did take some photographs, identified a few, and now I can share some of these finds.

***Latirus abbotti*** **Snyder, 2003. I collected a half dozen or so of these distinctive Fasciolariidae under rocks and coral slabs in 25 to 40 feet of water off the open ocean side of West End, Roatan Island, Honduras, in the 1980s. At the time I was convinced it was a new species. Shown are both the living animal and the cleaned shell.**



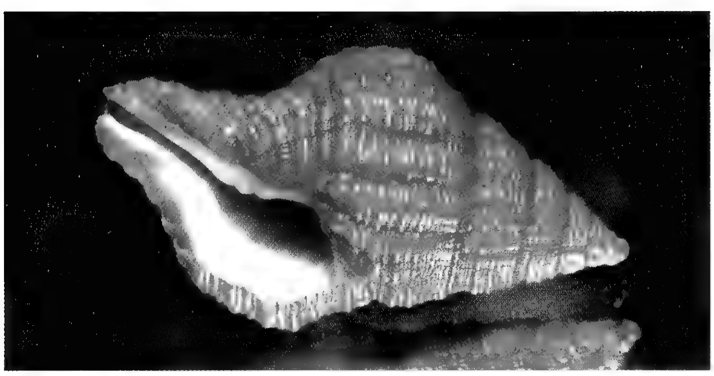


***Latirus cariniferus*** **(Lamarck, 1816). This species (McGinty's Latirus) was collected in 10 to 20 feet of water around the rocky reefs of West End, Roatan Island, Honduras. This species is quite variable in color and sculpture. The second photo shows two specimens that display differing types of umbilicus, one wide and one narrow, as well as differing sculpture.**

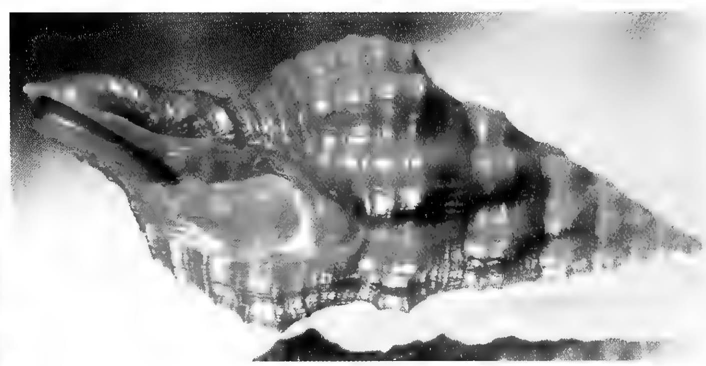


*Latirus martini* Snyder, 1989. I discovered this heavy-shelled species in 1985 in the shallow inshore reefs off of West End, Roatan Island, off the Bay Islands of Honduras. These shells were found mainly under large rocks in the rubble on the inshore side of the fringing barrier reef. Out of the many specimens collected over two or three months, most were small, presumably juvenile, and only two or three of the larger, more robust and knobby adults (as shown) were found. This specimen is about 55mm.

*Latirus martini* Snyder, 1989. This is a 60mm adult with three 17mm juvenile specimens crawling on it. The juvenile shells look almost like a different species, but a careful comparison between the juvenile shell and the early whorls of the adult soon cleared up that problem. The juveniles appeared to all have a covering of a hydroid colony for added camoflauge. This covering was not apparent on the adult specimens.



*Latirus martini* Snyder, 1989. A cleaned juvenile shell showing the sculpture differences between these small specimens and the adults.



*Latirus* sp. An unnamed shell from off the northwest coast of Roatan Island, Honduras. This species lives at a depth of 20-25 feet in coral rubble. Size approximately 25mm.

*Dolicholatirus ernesti* Melvill, 1811. Despite its small size (6-8mm), this colorful shell deserves accolades for its beauty. It is found throughout the lower Caribbean and lives on algae-covered rocks making no effort at concealment. These two were collected in about four feet of water at Flowers Bay, Roatan Island.

# A History of the Journal *The Pariah* and Shell-Related Books by Jerry G. Walls

**by Leslie Crnkovic**

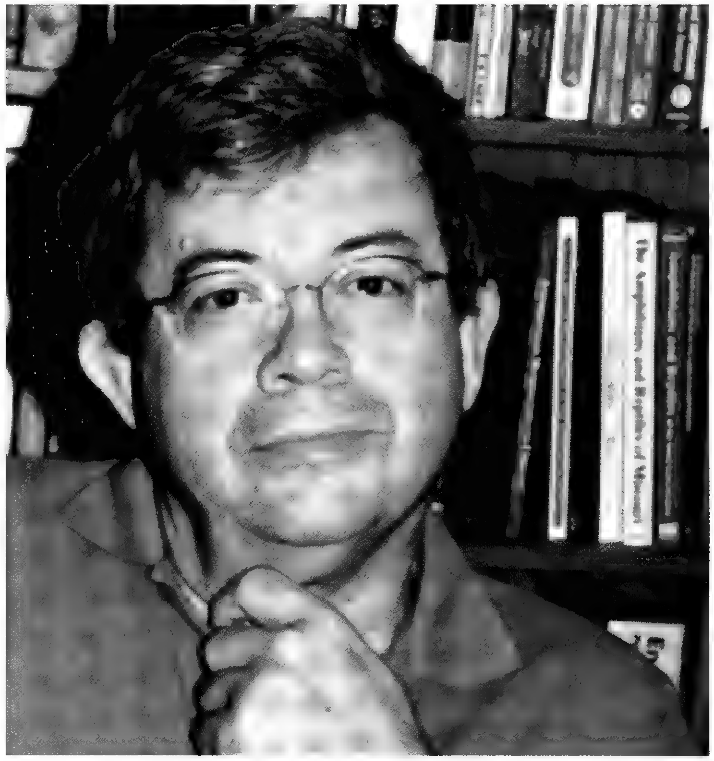
**(with Annotated Bibliographies and Indices)**

### INTRODUCTION

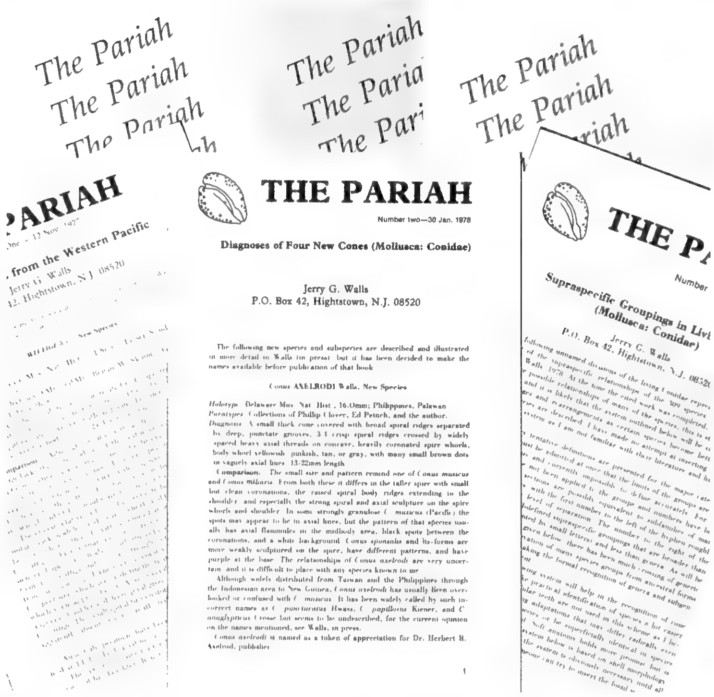
Author and biologist Jerry G. Walls has made significant contributions to conchological and malacological literature for the last 30 years, authoring, co-authoring, and editing several conchological monographs. He was the creator and editor for the scientific serial publication *The Pariah*, in which 10 new species and 2 new names were introduced spanning 8 issues from 1977 to 1980. Contained herein is an exploration of the history of these publications, complete bibliographies, a brief biographical sketch, and indices for *The Pariah*. Initial portions on "Cone Shells" and *The Pariah* are excerpted from Walls (2002).

BIBLIOGRAPHIES & INDICES (provided herein)
- Shell and Marine Invertebrate books, annotated bibliographies
- An abbreviated, concise listing of other T.F.H. books authored, co-authored, or edited (no dates)
- *The Pariah* (1977-1980) - All issues, publication dates, contents, titles, plates, pages, and prices.
- *The Pariah* - Index of New Names published.
- *The Pariah* - General Index of all species names,

Major references only, by family:
CONIDAE, CYPRAEIDAE, OVULIDAE, HARPIDAE.



**Jerry G. Walls and the *Pariah***




### "CONE SHELLS" AND *THE PARIAH*

"Cone Shells: A Synopsis of the Living Conidae"
*The Pariah* – an irregularly published journal

Almost 30 years ago Jerry found himself in an unusual position. He had completed a large manuscript for a book on cone shells (Conidae) that was waiting to be published by his employer, T.F.H. Publications in Neptune, New Jersey. Unfortunately, it was a very large book (over 1000 pages) with hundreds of color photos, very expensive to produce, and with a limited market. For those reasons it took a long time to assemble and then became a "back burner" book awaiting funding for the actual printing.

The manuscript contained the descriptions of new species and subspecies of *Conus*, and it was soon apparent that instead of appearing in late 1977 as planned, the manuscript that would become the book titled "Cone Shells" might not be published for years. The collectors and owners of some of the material of the new taxa were applying pressure on him for names they could use in other works, and rumors were circulating that he was now in some type of competition with other conchologists to be out first with the names. Frankly, he was not as worried about being "scooped" as of having to make significant changes throughout the book manuscript if his new names could not be used. Changes would mean further delay.

To save the situation, in late 1977 he decided to self-publish the new names. For this reason the journal, *The Pariah*,


**"Cone Shells" by Jerry Walls, published in March 1979. This date is not listed in the book. The inset shows the spine of the second printing which had better color plates but an inferior cover that yellowed with age. The small dot below the letters T.F.H. indicates this is the second printing. T.F.H. had very high standards for color photography and few readers would ever notice a problem with the color plates in the first printing.**

was born. Color slides of two new species were converted to black and white prints; then the type was set at a linotype company in New York. Jerry pasted up the repro and had some 200 copies of *The Pariah,* number one, run off at a local jiffy press, for a total cost of perhaps $60.00 and about 10 days to produce. Number two, with four new cones, followed a bit over two months later. Numbers three to eight were published and distributed irregularly from April 1978 through September 1980.

Jerry was careful to follow the rules for describing new species, including comparisons, types, and diagnoses. He deposited all of the holotypes in the Delaware Museum of Natural History, which had allowed him more-or-less free run of their collections and library. The paratypes in his collection were later given to H.E. Coomans at the Institute of Taxonomic Zoology at the University of Amsterdam for use in his unfortunately never completed "Revision of *Conus*." Contrary to rumor, no paratypes in his possession were ever sold, though some specimens used for photos in the book were sold by the Morrison Galleries and were so marked.

To make sure that *The Pariah* was published legitimately, each copy carried a cover price ($.50 for most, with No. 3, 6, and 8 at $1.00) and statement of availability. There were about 50 standing orders, and most of the stock of each number was wholesaled for distribution to "The Shell Cabinet" in Falls Church, Virginia, where it was listed and sold on their price lists. At least 20 additional copies of each issue were distributed to standing orders and libraries on the masthead date. *The Pariah* fulfils all requirements for publication, and all of its names are available. Some 200 to 400 copies were produced of each number, if Jerry's recollections serve correctly.

"Cone Shells: A Synopsis of the Living Conidae" finally saw the light of day on 6 March 1979. There are, however, two notable problems with the printed books.

First, the book was printed in Singapore, and the printer messed up. They printed (believed to be) 6,000 copies before the color separations were approved. So many of the photos came out below standard that T.F.H. forced them to remake several dozen plates and print an additional 1,500 revised copies. The revised copies are marked (a well-kept secret) by a small dot below the letter "F" inside the (T.F.H.) logo oval above the style number "S-102" on the spine. Thus two slightly different versions of the plates, not the text, exist.

The second problem, much to the confusion of bibliographers, is that no copyright or date appears in the book. At the time a book written by a U.S. author but printed abroad in certain quantities could not legally carry a copyright notice, thus no copyright! The actual date of publication of "Cone Shells" is 6 March 1979, when Jerry personally sent copies to several libraries and watched other copies being packed at T.F.H. for distribution to resellers.

"Cone Shells" also differs from the other T.F.H. publications discussed herein by being bound in a buckram cloth cover. Conversely to having better plates, the finish of the buckram on the 2nd printing of "Cone Shells" is inferior to the first and tends to yellow, as is shown in the enlargement of the spine logo (with dot).

In addition to many new taxa, *The Pariah* also contains a few other articles on cowries, cones, and harps plus several editorials commenting on the status of recently described cones. It also contains one long article suggesting subdivisions of the genus *Conus*, but using a numbering system rather than formal names. Jerry has always been disappointed that no one followed up on this article and tried to make some sense of Conidae at the generic level.

By 1980 it was apparent to Jerry that his interest in conchology was waning, and he was becoming disgusted with the failure of workers and collectors to realize that shell species are variable. The flood of "new cones" being described continued unabated. He raised his hands in disgust, sold or gave away his collections and library, and did not look at shells again for 20 years. About this same time T.F.H. moved out of the shell book market. They considered it too small to profitably support mass-produced books, even on the major families.

*The Pariah* ended with issue number eight, on Sept. 30, 1980. Jerry is still proud of this little journal, and he still believes it had a small impact on taxonomy of the cones, at least. Perhaps someday it will be continued. Original copies are not rare (it seems that 200 to 400 copies were quite sufficient to supply the market, as he first estimated), but this may only be due to obscurity. Perhaps this article will bring it to the attention of a new generation of workers and collectors.

Included with many copies of *The Pariah,* number one, Jerry provided a "Tear Sheet" (article reprint) from the January 1978 *Tropical Fish Hobbyist* magazine. Text is excerpted as follows:

**"Walls Describes Two New Cone Species"** TFH Invertebrate Editor Jerry G. Walls just described two new species of cone shells in advance of publication of his new book *Cone Shells*, due to be released at the beginning of 1978. Described in *The Pariah*, No.1, 1977, *Conus wittigi* is a rare species known from one island in Indonesia, while *Conus tribblei* is common in Taiwan and the Philippines. The name *C. tribblei* incidentally, refers to the "Tribbles" of Star Trek® fame.

There are also limited reproduction "copies" of *The Pariah.* Malacology publication dealer (retired 2003) and author Richard (Dick) E. Petit, of N. Myrtle Beach, South Carolina, duplicated some issues on occasion (with permission). Specifically, issue number one was reproduced (about a dozen copies) with the "Tear Sheet" duplicated in color on the back with annotation. There was consideration of reproducing the entire set, but not enough consumer interest was generated at the time. Dick had also been associated with "The Shell Cabinet" in earlier years.

If you are interested in acquiring a combined new reprint edition of *The Pariah* with indices, please contact the author. If enough interest is expressed it may be collectively reprinted or published to a PDF file.

## "COWRIES"

Traveling back even further in time to the early 1970s, T.F.H. decided to venture from the aquarist and pet books that were their staples into what seemed to be a natural fit of "shell identification" books. "Cowries" was to be their first book in the new "S" series.

Dr. John Taylor, of the British Museum of Natural History, began this work, but lacked the needed publishing skills and had his attentions divided with his museum duties. Jerry, possessing the skills in publishing and malacology that were needed, picked up the project and completed the book, making major changes in the process. The book includes 194 pages of color photos of 187 (of what he considered) "valid" species. It also included a wall-chart/poster: *Cowries - A T.F.H. IDENTI-CHART.* Thus "Cowries" (S-101) became his and T.F.H.'s first shell book in 1975, with Jerry shown as the co-author.

"Cowries" has several sections:
- The Living Cowry – by Dr. John Taylor
- Cowries and the Collector – by Jerry G. Walls
- *Cowries – A T.F.H. IDENTI-CHART* with color illustrations of all species.

The second edition contained additional sections:
- Color Atlas of Cowries
- Synopsis, Pricing Guide and Index – by Jerry G. Walls and Warren E. Burgess.

T.F.H. followed a short two years later in 1979 with their second shell identification book, "Cone Shells" (S-102), as previously discussed. Jerry later revised the *Cowries* book and became the senior author. It is listed as the "second edition 1979, with selections on the Living Cowry by Dr. John Taylor." It also included a revised *IDENTI-CHART*, affording the same edition changes.


**The two editions of "Cowries" were published in 1975 and 1979, respectively. The publication dates are listed in the volumes.**

## ABBOTT on WALLS and T.F.H.

The following is an interesting quote from R. Tucker Abbott's personal correspondence to S. Peter Dance in 1975 shortly after the publication of "Cowries":

> "The Taylor-Walls Cowries book is an excellent production ($14.95 U.S.) and will be a best seller. It was manufactured in Hong Kong. I don't see how we can compete with them on the identification book line. Do you have access to names and addresses of Hong Kong book manufacturers? We could conceivably beat Axelrod in Cones, Strombus, Cassis and a few others, but it would be a fight uphill. I think the day of identification books soon will be waning. So I think we should concentrate on the autobiography, historical, and biological accounts." *

*** Note: Mr. Crnkovic may publish this letter in a future paper on the history of "The Collector's Encyclopedia of Shells" and "The Compendium of Seashells."**


Given this, Abbott never published any monographic identification books, and other than his collaboration with Peter on the "Compendium of Seashells" (1982), no further joint ventures materialized between Abbott and Dance.

### "CONCHS, TIBIAS & HARPS," "SHELL COLLECTING," AND "THE ENCYCLOPEDIA OF MARINE INVERTEBRATES"

In 1980, Jerry and T.F.H. released their third and final "S" series shell identification book, "Conchs, Tibias & Harps: A Survey of the Molluscan Families Strombidae & Harpidae" (S-103), with 192 pages. The following year, in 1981, Jerry and T.F.H. released another shell related book, "Shell Collecting" (KW-130). It is a small 94-page book packed with information. Sporting 41 color and 26 black and white photos, this book provides a wealth of information for the novice about nearly every aspect of the hobby. Finally, in 1982, T.F.H. released "The Encyclopedia of Marine Invertebrates" (H-951), edited by Jerry. It is a large book with 736 pages, of which pages 331-506 are devoted to phylum Mollusca, with sections by: L. Warren, T. E. Thompson, and C. P. Palmer. There have been several printings with differing covers; later printings have new ISBN numbers on the back cover, but they still have the original number on the imprint page.

### "APPLE SNAILS IN THE AQUARIUM"

A final entry to Jerry and T.F.H.'s books relating to shells is the 1996 "Apple Snails in the Aquarium, Ampullariids: Their Identification, Care and Breeding" (TS-260), by Dr. Gloria Perera and Jerry G. Walls. It has 121 all-color pages and is in a larger size format than the other books. As the title implies, it covers the biology, life cycle, identification and origination of a large number of apple snail species.

### ABOUT JERRY WALLS

Jerry worked as an editor and writer for T.F.H. from 1972 to 2003. His wife, Maleta, co-authored some publications with him as well. Today, he, his wife, and assorted pets are back living in his hometown of Bunkie in central Louisiana. He is currently working on the Louisiana Fauna Project, which catalogs the invertebrates of the state, and continuing his interest in crawfish taxonomy. He also writes articles, books, and a monthly column on reptiles and amphibians. He has kindly contributed to *American Conchologist* as well (vol. 36, No. 1, March 2008).

When it comes to sorting species, Jerry is not what would be called a "splitter." Instead he is conservative and considers variability as the norm within species. In light of this, perhaps one of the best features of many of Jerry's books is the synonymic index.

*Bio-sketch excerpted from: Abbott 1987*

WALLS, Jerry G(lenn), born May 28, 1946, Bunkie, La. Editor; *Amateur Conchologist*; McNeese State Univ., B.S., 1968, M.S., 1970; Marine Biologist, La. Wildlife and Fish. Comm., 1970-71; Editor, T.F.H.; Memb.: Biol. Soc. Washington; Publ.: "Cone Shells;" "Cowries;" "Conchs, Tibias and Harps;" *The Pariah* (editor); numerous articles on marine moll., invert., fishes, herpetology. mollusk research: taxonomy of cones, cowries, conchs, olives, & marine bivalves. Small research collections of these groups. Spouse: Maleta Milsom Walls, Postal Worker.

### ABOUT T.F.H.

In 1952, Dr. Herbert R. Axelrod created the magazine *Tropical Fish Hobbyist* (from whose initials comes the acronym T.F.H.). Using this as a base, he founded the publishing company T.F.H. Publications Inc., Ltd., which eventually moved to Neptune, New Jersey. Dr. Axelrod is the author of many of their publications, especially as relates to aquarium fishes. Dr. Axelrod sold the company to Central Garden and Pets in 1997.

"T.F.H. has created the most comprehensive animal reference database on the planet. With its vast knowledge base, they have become the world's largest and most respected publisher of pet care and animal reference books. Our library has over 1,200 titles and specialty magazines in print … from simple instruction manuals to brilliantly colorful encyclopedic atlases." (T.F.H. 2003)

### BIBLIOGRAPHIES AND INDICES

**SHELL AND MARINE INVERTEBRATE BOOKS:**
All books are published by T.F.H. Publications Inc. and are listed by publication year. Each book has a laminated hardbound glossy photo cover, size - 22cm x 15cm (except as noted).

Dr. John Taylor and Jerry G. Walls 1975
***Cowries***, 1st Edition, 288 pp., hardbound, medium blue gloss photo cover, color photos of 187 valid species; Sections: The Living Cowry - Dr. John Taylor, British Museum of Natural History; Cowries and the Collector, Jerry G. Walls. Also contains: Cowries - A T.F.H. IDENTI-CHART with color illustrations of all species, (tear proof, waterproof and grease proof), Wall Chart - 19 "x 25" (folded to 5"x 8.5").
TFH # S-101 List: $14.95 (1lb 6.5 oz / .636 kg)
ISBN 0-87666-627-6

Jerry G. Walls 1979
***Cowries***, 2nd Edition, Revised, with selections on the Living Cowry by John Taylor, 286 pp., hardbound, medium green gloss photo cover. Also contains a revised: Cowries - A T.F.H. IDENTI-CHART. Walls is now singly listed as author, with Warren E. Burgess as co-author of catalog at end.

TFH # S-101 List: $14.95 (1 lb 4.5 oz / .580 kg)
ISBN 0-87666-630-6

Jerry G. Walls 1979
***Cone Shells:** A Synopsis of the Living Conidae*, (March 6, 1979), 1010 pp., plus 6 miscellaneous pages; light blue buckram cloth photo cover; 2nd printing also in 1979, annotated only by a small dot under the "F" in the (T.F.H.) oval on spine, has many plates replaced with better quality, neither printing is dated internally. Conversely, the binding on the second printing is not as good and tends to yellow as is shown in the enlargement of the spine logo.
TFH # S-102 List: $49.95 (3 lb 10.7 oz / 1.664 kg)
ISBN 0-87666-628-4 Printed in Singapore.

Jerry G. Walls 1980
***Conchs, Tibias & Harps:** A Survey of the Molluscan Families Strombidae & Harpidae* (Every Species Illustrated in Color), 192 pp., hardbound, black gloss color photo cover.
TFH # S-103 List: $19.95 (15.7 oz / .444 kg)
ISBN 0-87666-629-2

Jerry G. Walls 1981
***Shell Collecting***, 94 pp., photos: 41 color, 26 black and white; hardbound, black and white gloss color photo cover with 12 different shells.
TFH # KW-130 List: $5.95 (7.4 oz / .208 kg)
ISBN 0-87666-631-4

Jerry G. Walls, Editor 1982 / 1990
***The Encyclopedia of Marine Invertebrates***, October 1982, 736 pages. Pages 331-506 devoted to Phylum Mollusca, sections by: L. Warren, T. E. Thompson and C. P. Palmer.
TFH # H-951 (2 lb 6 oz / 1.36 kg)
First Edition – October 1982
ISBN 0-87666-495-8
The Cleaner Shrimp: *Stenopus hispidus* on cover
1990 Reprint List: $69.95 (3 lb 10.7 oz / 1.664 kg)
ISBN 0-86622-141-7 UPC 0866221417 (on back cover)
Imprint page not revised so it lists old ISBN & cover photos. Two crustacean species on new cover not found in book. Printed on much heavier paper stock.

Dr. Gloria Perera, Jerry G. Walls, 1996
***Apple Snails in the Aquarium, Ampullariids:** Their Identification, Care and Breeding*, 121 all-color pages. (26 x 17.5 cm)
TFH # TS-260 List: $19.95 (1 lb 5.8 oz / .620 kg)
ISBN 0-7938-2085-5 UPC 018214120858

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Other T.F.H. books, edited, authored or co-authored by Walls (w/o dates) include:
*Backyard Bird Identification Guide, T.F.H. Wild Birds Series; Best Reptile Pets; Blue-Tongued Skinks: Keeping & Breeding Them in Captivity; Cooters, Sliders & Painted Turtles; Fantastic Frogs; Gray-Banded Kingsnakes: Identification, Care and Breeding; Kittens as a New Pet; Living Boas; Living Pythons; Poison Frogs of the Family Dendrobatidae: Jewels of the Rainforest; Rat Snakes: A Hobbyist's Guide to Elaphe; Rattlesnakes: Their Natural History & Care in Captivity; Red-Eyes and Other Leaf Frogs; Tarantulas & Scorpions; The World of Venomous Animals; Tortoises; Your First Lizard. The Guide to Owning (series): A Corn Snake; American Treefrogs; Frogs; Geckos; Millipedes and Centipedes; Poison Frogs; Python; Skinks; Tarantula; Tortoise; Uromastyx & Butterfly Agamids.*

## *THE PARIAH* (1977-1980)
## JERRY G. WALLS, EDITOR

Published irregularly, non-subscription; issues were available from "The Shell Cabinet" in Falls Church, Virginia, for $1.00 each.
A total of 8 issues were published with 13 articles between Nov. 12, 1977, and Sept. 30, 1980. The size was 5.5" x 8.5". This was a scientific papers series (3 to 16 pages each) used to publish new species and comment on systematic issues, covering *Conus*, *Cypraea*, and *Harpa*. It contained black and white photos. Most parts are authored by Jerry G. Walls; co-authors are as noted below. Numbers 7 & 8 have varying blue card stock covers, 8 is printed on gloss paper.

### THE PARIAH ISSUES AND CONTENTS

Pariah Number One, 12 Nov. 1977, $.50
- Walls, Jerry G. "Two New Cones from the Western Pacific," pp. 1-3, 2 bw pl.

Pariah Number Two, 30 Jan. 1978, $.50
- Walls, Jerry G. "Diagnoses of Four New Cones (Mollusca: Conidae)," pp. 1-7, 5 bw pl.

Pariah Number Three, 17 April 1978, $1.00
- Walls, Jerry G. "Supraspecific Groupings in Living Cones (Mollusca: Conidae)," pp. 1-13.
- Walls, Jerry G. "Editorial: Status of more African Cones described by H. Trovao," p. 15.

Pariah Number Four, 25 Sept. 1978, $.50
- Walls, Jerry G. "Another Viewpoint on the Living Harps (Mollusca: Harpidae)," pp. 1-4.
- Clover, Phillip W. "Status of *Cypraea thomasi* Crosse, 1865 (Mollusca: Cypraeidae )," pp. 5-7, 6 bw pl.
- Walls, Jerry G. "Editorial—-*Conus patae* Abbott, 1971 vs. *Conus rudiae* Magnotte, 1971," pp. 7-8.

Pariah Number Five, 30 April 1979, $.50
- Walls, Jerry G. "Three New Indian Ocean Cones (Mollusca: Conidae)," pp. 1-6, 2 bw pl.
- Walls, Jerry G. "Notes on *Conus dusaveli* (H. Adams, 1872) (Mollusca: Conidae)," pp. 6-8, 1 bw pl.

Pariah Number Six, 16 Nov. 1979, $1.00
- Walls, Jerry G. "Editorial: New Description Requirements," p. 2.
- Donohue, Jerry. "The Saga of *Cypraea thomasi* Crosse 1865 (Mollusca: Cypraeidae )," pp. 3-7.
- Walls, Jerry G. "Cones Recently Described by Shikama, da Motta, and Sarasua (Mollusca: Conidae)," pp. 8-11.

Pariah Number Seven, 1 Feb.1980, $.50
- Walls, Jerry G. and Warren E. Burgess. "Cowry Notes. I-II: I. New names for two living cowries; II. Comments on *Siphocypraea donmoorei* Petuch, 1979," pp. 1-4.
- Hunt, D. "Status of *Conus caledonicus* Hwass, 1792," pp. 5-6.

- Walls, Jerry G. "Editorial—Still more new cones," pp. 7-8.

Pariah Number Eight, 30 Sept. 1980, $1.00
- Cardin, Charles and Jerry G. Walls. "A New False Cowry from Pacific Panama (Ovulidae: Simniini)," pp. 1-2, 1 bw pl.
- Walls, Jerry G. "Conus Update: Sept. 1979-Feb. 1980," pp. 3-6.
- Walls, Jerry G. "Editorial - A Piecemeal Cone Revision," pp. 7-8.

**THE PARIAH : NEW NAMES PUBLISHED**

Section Key:
AMNH = American Museum of Natural History, New York City, NY
DMNH = Delaware Museum of Natural History, Wilmington, DE
Local: = Type Locality

**Concise List by Issue / Date:**

*No. 1 1977*
*Conus wittigi* Walls, n. sp.
*Conus tribblei* Walls, n. sp.
*No. 2 1978*
*Conus axelrodi* Walls, n. sp.
*Conus cloveri* Walls, n. sp.
*Conus kerstitchi* Walls, n. sp.
*Conus suturatus sandwichensis* Walls, n. subsp.
*No. 5 1979*
*Conus biliosus meyeri* Walls, n. subsp.
*Conus musicus parvatus* Walls, n. subsp.
*Conus nielsenae reductaspiralis* Walls, n. subsp.
*No. 7 1980*
*Cypraea vulgivagus* Walls & Burgess, nom. nov. pro
*Cypraea vredenburgi* (Schilder, 1927)
*Cypraea mantellum* Walls & Burgess, nom. nov. pro
*Cypraea mariae* (Schilder, 1927)
*No. 8 1980*
*Phenacovolva (Subsimnia) lenoreae* Cardin & Walls, n. sp.

**Annotated List with Catalog Nos., Range and Status**

*Phenacovolva* (*Subsimnia*) *lenoreae* Cardin & Walls, 1980
Pariah No. 8: 1-2
DMNH Catalog No: 157331 (Holotype)
Type Size: 16.5 x 7.3 mm
Local: Isla Gobernador, Perlas Isls., W. Panama
Status: valid species

*Conus axelrodi* Walls, 1978
Pariah No. 2: 1
DMNH Catalog No: 123127 (Holotype)
Type Size: 16 x 19 mm
Local: Palawan, Philippine Islands
Status: valid species
Ref: Röckel et al., 1995 - Sp # 36, pl. 9, fig. 28-31.

*Conus cloveri* Walls, 1978
Pariah No. 2: 2
DMNH Catalog No: 123128 (Holotype)
Type Size: 25.7 x 13.3 mm
Local: Anse Bernard, Dakar, Senegal, W. Africa
Status: valid species
Ref: Monteiro et al. 2004 – pl. 33, fig. 1-6.

*Conus kerstitchi* Walls, 1978
Pariah No. 2: 2-3
DMNH Catalog No: 123130 (Holotype)
Type Size: 31.5 x 15.9 mm
Local: off Isla Tres Marias, Nayarit, W. Mexico
AMNH Catalog No: 220848 (Paratype)

*Conus biliosus meyeri* Walls, 1979
Pariah No. 5: 3
DMNH Catalog No: 122117 (Holotype)
Type Size: 44 x 24.5 mm
Local: Genezano, Natal, South Africa
Status: valid subspecies of *biliosus* Röding, 1798
Ref: Röckel et al., 1995 - Sp # 14, pl. 5, fig. 5-6.

*Conus musicus parvatus* Walls, 1979
Pariah No. 5: 4
DMNH Catalog No: 122118 (Holotype)
Type Size: 21.5 x 13 mm
Local: Natal, South Africa
Status: valid subspecies of *musicus* Hwass in Bruguière, 1792
Ref: Röckel et al., 1995 - Sp # 27, pl. 8, fig. 22-26.

*Conus nielsenae reductaspiralis* Walls, 1979
Pariah No. 5: 5-6
DMNH Catalog No: 122119 (Holotype)
Type Size: 33.4 x 18.3 mm
Local: Geraldton, W. Australia
Status: valid subspecies of *nielsenae* Marsh, 1962
Ref: Röckel et al., 1995 - Sp # 285, pl. 60, fig. 3-8.

*Conus suturatus sandwichensis* Walls, 1978
Pariah No. 2: 3-4
DMNH Catalog No: 123126 (Holotype)
Type Size: 14.5 x 7 mm
Local: Pokai Bay, Oahu, Hawaii
Status: valid subspecies of *suturatus* Reeve, 1844
Ref: Röckel et al., 1995 - # 46, pl. 12, fig. 7-8.

*Conus tribblei* Walls, 1977
Pariah No. 1: 2
DMNH Catalog No: 123125 (Holotype)
Type Size: 62.5 x 29 mm
Local: China Sea off of Taiwan
Status: valid species
Ref: Röckel et al., 1995 - Sp # 102, pl. 25, fig. 10-15.

*Conus wittigi* Walls, 1977
Pariah No. 1: 1, 3
DMNH Catalog No: 123129 (Holotype)
Type Size: 32 x 15 mm
Local: Lesser Sunda Isl., N. of Timor
AMNH Catalog No: 241621 & 245390 (Paratypes)
Status: valid species
Ref: Röckel et al., 1995 - Sp # 168, pl. 37, fig. 30-33.

**New Names** (not newly described species)

*Cypraea vulgivagus* Walls & Burgess, 1980
Named as a "nom. nov. pro"
Pariah No. 7: 1
Status: = *Cypraea* (*Erronia*) *vredenburgi* (Schilder, 1927)
*nomen nudem*, change rejected by Lorenz,
*C. vredenburgi* restored, thus *vulgivagus* is a synonym.
Ref: Lorenz 2000 - pg. 124, pl. 48, see notes on pg 25.

*Cypraea mantellum* Walls & Burgess, 1980
Named as a "nom. nov. pro"
Pariah No. 7: 2
Status: = *Cypraea Annepona mariae* (Schilder, 1927)

*nomen nudem*, change rejected by Lorenz, *C. mariae* restored, thus *mantellum* is a synonym. Ref: Lorenz 2000 - pg. 222, pl. 104, see notes on pg. 25.

## THE PARIAH GENERAL INDEX OF ALL SPECIES NAMES

arranged by Family, major references only


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*Harpa*, key, 4: 4

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*Conus benten*, 6: 8
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*Conus wittigi*, 1: 1, 3
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*Cypraea fernandoi*, 7: 1
*Cypraea mantellum*, 7: 2
*Cypraea mariae*, 7: 2
*Cypraea mus*, 7: 2-4
*Cypraea mus suta*, 7: 3
*Cypraea thomasi*, 4: 5-7; 6: 3-7
*Cypraea vredenburgi*, 7: 1
*Cypraea vulgivagus*, 7: 1

### OVULIDAE

*Phenacovolva lenoreae*, 8: 1-2
*Subsimnia*, 8: 1-2


## REFERENCES:


**2004. Monteiro, António; Tenorio, Manuel J.; Poppe, Guido T.** A Conchological Iconography - The Family Conidae: The Genus *Conus* of West Africa and the Mediterranean, foreword by Dieter Röckel & a contrib. on the radulae by E. Rolán. ConchBooks, Hackenheim, Germany, 2+102 pp., 118 text-figs, 98 maps, 4 b/w + 164 col. pls., ISBN: 3-925919-68-6

**2003. T.F.H. Publications, Inc.** Neptune, NJ, statement from web site: www.TFH.com

**2002. Walls, Jerry G.** "A History of *The Pariah* and the book *Cone Shells*," unpublished manuscript.

**2000. Lorenz, Felix; Hubert, Alex.** A Guide to Worldwide Cowries: 2nd Enlarged & Completely Revised Ed., ConchBooks, Hackenheim, Germany, 584 pp., 128 cpl., 60+ ill., ISBN: 3-925919-25-2 (1st ed.1993)

**1995. Röckel, Dieter; Korn, Werner; Kohn, Alan J.** Manual of the Living Conidae, Volume 1: Indo-Pacific Region, Verlag Christa Hemmen, Wiesbaden, Germany, 517 pp., 84pl., 136 sp., ISBN: 3-925919-09-0

**1988. T.F.H. Publications, Inc.** Neptune, NJ, 1988 Book Catalog, 80 pages, quarto, soft cover with plates.

**1987. Abbott, R. Tucker.** Register of American Malacologists: A National Register of Professional & Amateur Malacologists & Private Shell Collectors & Biographies of Early American Mollusk Workers Born Between 1618 & 1900, 2nd Ed (1986-1987). American Malacologists Inc., Melbourne, Florida, 164 pages. [Walls on page 140]

**1978. Anonymous/Editor.** Rare & Well Done: Walls Describes Two New Cone Species, *Tropical Fish Hobbyist* magazine, January 1978, Neptune, NJ, page 41, 2 color photos.

**1975. Abbott, R. Tucker.** Excerpt from personal correspondence on his letterhead, dated December 7, 1975, to S. Peter Dance. Topic: potential joint venture publishing company and projects, 6th paragraph, page 2, unpublished.*



**ACKNOWLEDGEMENTS:**

Special thanks for assistance by: Leslie L. Skibinski, Collection Manager of Mollusks, DMNH - for holotype photos, and review; Dr. Alan J. Kohn, Prof. Emeritus, Dept. of Zoology, Univ. of Washington, Seattle - for current status of *Conus* species; Dr. Felix Lorenz, Institute of Zoology, Justus-Liebig-University, Gießen, Germany - for current status of *Cypraea* species; Ms. Phyllis "Rusti" Stover, Houston, TX - proofing.



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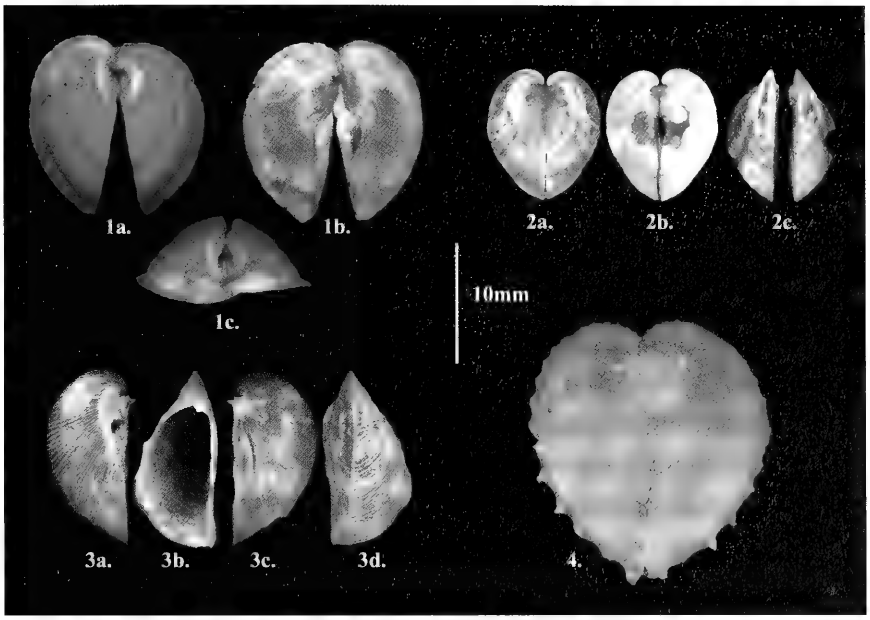
# José Leal Names A New Bivalve Genus and Two New Species

By Tom Eichhorst

New species are named all of the time that do not get reported in these pages. What makes this time different? First, it involved a mystery. Many of us saw images of these new bivalves during a presentation by Dr. Leal at the Portland, Oregon, COA convention. He described shells made available by Frank Frumar and Steve Kern that looked like the common heart cockle, *Corculum cardissa* (Linnaeus, 1758) from the Indo-Pacific, except these shells had been found off of the Florida Keys. Dr. Harry Lee brought this strange occurrence to the attention of Dr. Leal, and things proceeded from there. By the time of the COA presentation, Dr. Leal had pretty much determined that these new specimens were different from the cardiid species from the Pacific, but they were still something of a mystery.




**1. *Dilemma frumarkernorum* Leal, 2008 (a. posterior, b. anterior, c. dorsal) from 229m, southwest of Key West, Florida; 2. *Dilemma spectralis* Leal, 2008 (right & left valves, a. posterior, b. anterior, c. lateral) from 950-961m off Vanuatu; 3. *Dilemma inexpectum* (Crozier, 1966 (left valve, a. posterior, b. internal lateral, c. anterior, d. external lateral) from 805m in the Tasman Sea; d. *Corculum cardissa* (Linnaeus, 1758) from inter-tidal depths in the Philippines. This is a composite of images by the author (*C. cardissa*), by José Leal (*D. frumarkernorum* & *D. spectralis*), & Bruce Marshall of the Te Papa Tongarewa Museum in Wellington (*D. inexpectum*).**

The second reason this new species is noteworthy is that while these shells are superficially similar to a *Corculum*, they are in fact so different that they did not fit into any existing bivalve genus. For anatomical and morphological reasons, they fit best into the family Poromyidae. The new species share some anatomical characters that are similar to (but still different from) the genera *Poromya* and *Cuspidaria*, but then there was that *Corculum* shell shape! This eventually led to erecting a new genus, *Dilemma*, within the Poromyidae. In case there is any doubt about the origination of the name *Dilemma*, I quote Dr. Leal: "The generic name is the Greek noun *dilemma*, a proposition consisting of questionable alternatives. It is used in this case to denote the impasses faced by the author in the course of this work."

The third reason for drawing attention to these new species is that based on stomach contents, they are predators. That in-and-of-itself it certainly not noteworthy; although predation is certainly not common in bivalves, it does occur. What is unusual is that these predators are also sessile bivalves attached permanently to the substrate by strong byssal threads. Predation is certainly possible to those who sit and wait, but while interesting in the plant world (Venus fly trap, pitcher plants, etc.), it is certainly noteworthy in a bivalve.

Finally, the forth reason for reporting on these new species is that the complete description is available for free online. Dr. Leal's paper was published in Zootaxa, an international online taxonomic journal at http://www.mapress.com/zootaxa/. Once on the homepage, click on Mollusca and scroll down to the paper by José Leal (if you continue to scroll down to the 2007 papers you will find the article on Augustus Reeve by Richard Petit reported on in the last issue).

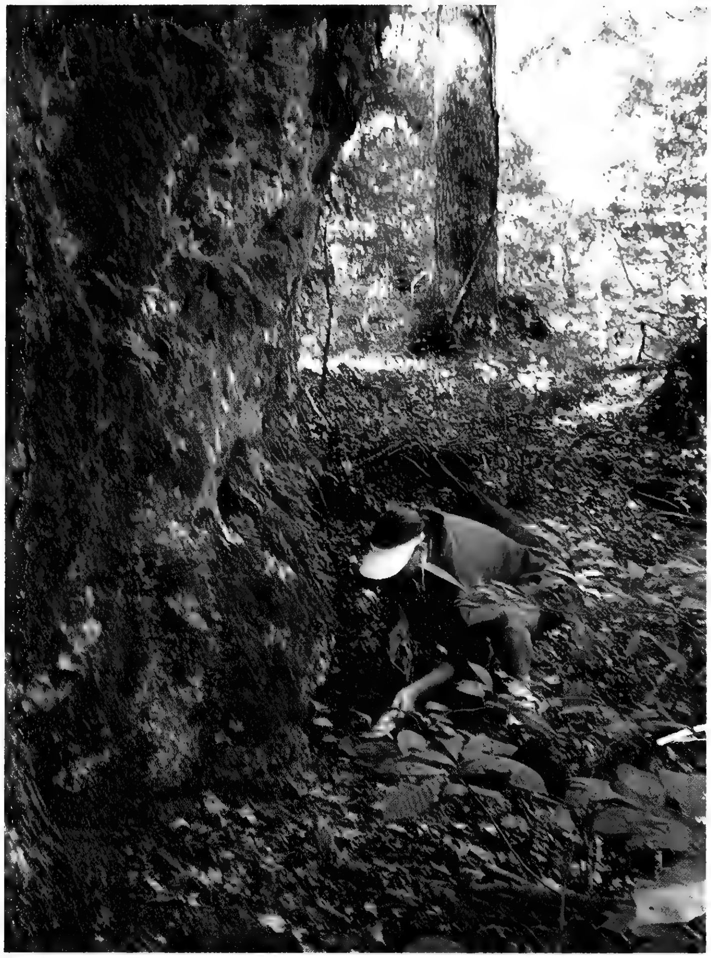
Once work started on the five specimens from the Florida Keys (most with preserved soft body parts), a second species (collected at 950-961m in 1994 off Vanuatu during the Musorstom 8 cruise) was found preserved in ethanol in the Muséum national d'Histoire naturelle in Paris. The Florida Keys species is *Dilemma frumarkernorum* Leal, 2008. The Vanuatu species is *Dilemma spectralis* Leal, 2008. A third species, *Corculum inexpectatum* Crozier, 1966, (now *Dilemma inexpectum* (Crozier, 1966)) that was described from a single valve dredged at 805m in the Tasman Sea, was also determined to belong in this new genus.

All are sessile predators in the family Poromyidae with shells that resemble those of the genus *Corculum* in the family Cardiidae. You can read the full account of this online, as well as view more detailed color plates of both the shells and the soft body parts of these species. Mystery solved, but it does beg the question, "Are there more out there?"

Thomas E. Eichhorst
thomas@nerite.com

# The Reluctant Explorer

**By Lori Schroeder**



**Lori can be seen here braving insects and poison ivy in Nelson County, Kentucky, in the search for land snails. In total she collected 22 different species, of which only one had been previously recorded from this county. Lori is digging in leaf litter at the base of a large rock that figures prominently in a follow up article in the next issue.**

***Helicina* (*Olygyra*) *orbiculata* (Say, 1818), commonly called the globular drop is one of the species Lori collected. These snails are only about 7mm in size and easily missed among leaf litter and rubble. Photograph by Bill Frank, from the Jacksonville Shell Club web page at: http://www.jaxshells.org**

How does one make a connection between Florida and land snails of Kentucky? Let me start with a conundrum presented by a friend. While hiking the woods of his Nelson County, Kentucky, farm, Gil, a family friend, brought me something I would find of great interest. Since it had a shell he assumed I would know what it was. When presented with the shell I simply said "It's a land snail."

"I know that," he replied, "But what kind is it," he asked?

My puny response: "I don't know."

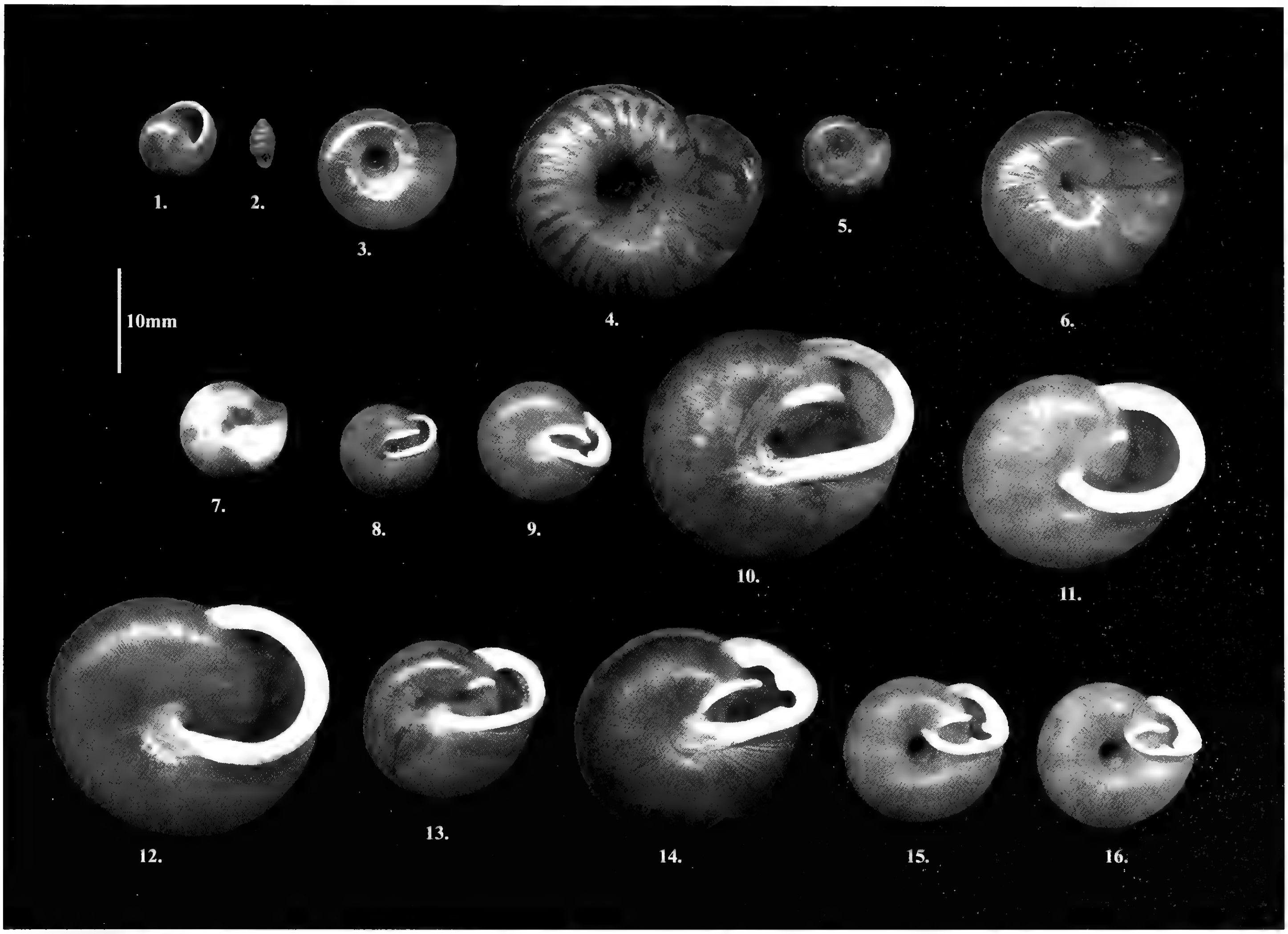
From that brief exchange I knew my interest in conchology would begin a new chapter.

Now let me take a moment and back up to the summer of 2002 to explain the Florida connection. My husband and I attended the Jacksonville Shell Show as the guests of Charlotte Lloyd and Frank Thorpe. The bargain table looked interesting and I was eager to find a hidden treasure someone had mistakenly overlooked. My hidden treasure was coming all right, but not in the form I thought. While digging through bags of shells from around the world I heard a vocal personage addressing me from across the room. When I turned to see who was bellowing my name, lo and behold, it was the incomparable Dr. Harry Lee. Within minutes our congenial conversation became a tutorial in the molluscan fauna of Kentucky.

The rest of the summer of 2002 I spent my free time focusing my attention on new acquisitions from the Conchologists of America annual convention. It wasn't until my friend showed me the land snail in the spring of 2003 that I reflected on my conversation with Dr. Lee. So, not to be out-collected by a friend, I set out one gorgeous spring day to collect land snails.

The decision of where to begin this field study was easy enough. Gil and his neighbor Don have close to seventy-five acres of property in the southern portion of Nelson County, most of the seventy-five acres being mature woodlands. Luckily for me, the two gentlemen were like putty in my hands and permission for unlimited trespassing was accorded with little effort on my part. The best way for me to describe this remote area is to have you imagine what the frontiersman Daniel Boone may have encountered in his travels. Other than a gravel road leading to a small rustic cabin, the terrain is rugged and the foliage dense, more about that later.

Before attempting my first foray into the field, I had to decide what tools and supplies would be required. If you want to be a scientist you must look like a scientist, act like a scientist, and order assistants to complete the menial tasks. Well, I did attempt the first two. The last would be impossible since I would be going




**1. *Helicina* (*Olygyra*) *orbiculata* (Say, 1818), globular drop, 2. *Gastrocopta armifera* (Say, 1821), armed snaggletooth, 3. *Haplotrema concavum* (Say, 1821), gray-foot lancetooth, 4. *Anguispira alternata* (Say, 1817), flamed tigersnail, 5. *Discus patulus* (Deshayes, 1830), domed disc, 6. *Mesomphix vulgatus* H. B. Baker, 1933, common button, 7. *Ventridens demissus* (A. Binney, 1843), perforate dome, 8. *Euchemotrema fraternum* (Say, 1824), upland pillsnail, 9. *Inflectarius inflectus* (Say, 1821), shagreen, 10. *Mesodon elevatus* (Say, 1821), proud globe, 11. *Mesodon thyroidus* (Say, 1817), white-lip globe, 12. *Neohelix albolabris* (Say, 1817), whitelip, 13. *Patera appressa* (Say, 1821), flat bladetooth, 14. *Xolotrema obstrictum* (Say, 1821), sharp wedge, 15. *Triodopsis hopetonensis* (Shuttleworth, 1852), magnolia threetooth, 16. *Triodopsis vulgata* Pilsbry, 1940, dished threetooth.**

into the field solo. I assembled supplies I thought necessary: water, bug spray, G.P.S., paper, pencil, alcohol, Ziploc baggies, and a garden claw. After perusing the supplies amassed in the back of my car, and not wanting to be burdened with a backpack while hiking, I settled for baggies and a garden claw for my essential gear. Oh yes, I also had a walking stick, a gift from Gil, but I had to leave it behind after the first day. Once it was immersed in water the walking stick became an unwieldy handicap. What Gil did not realize was he had unknowingly used slippery elm, which lives up to its name when wet.

At this point I have to pause my story to convey two deeply troubling concerns. First and foremost is that I HATE spiders! Second, I am highly sensitive to poison ivy. One look at the surroundings and I could see it was going to be impossible to avoid either. With the impenetrable wall of green and spider webs evident on the horizon, I was assailed by serious doubts.

My initial excursions were slow going. I traipsed around a small, spring-fed pond with some exposed rock, walked the gently flowing creek, but mostly acclimated myself to the area. My garden claw became indispensable. It was used to beat back attacking spiders, dig up leaves and forest detritus, turn over rocks, but mostly to protect my hands from gross, disgusting bugs. Believe me, you do not want to see the horrors that lie just beneath the surface. Any attempts to avoid the dreaded poison ivy proved impossible. I swear I didn't go out and roll in the stuff but it had to have jumped on me. I have surmised that when "P.I." leaves are billowing in the wind it has to be an adapted form of communication. Like an animal can smell fear... so can poison ivy sense an allergy. A precious bottle of Benadryl liquid became as much a part of my person as another would carry a cell phone. Conventional wisdom dictates one should not scratch the rash of *Rhus* contact dermatitis. I

seriously doubt this was uttered by someone who has ever had said rash.

I found a few shelly remnants strewn about on the first couple of trips. Nothing much to show for my efforts, but it did prove snails were out there, and I became bound and determined to find them. Slowly I developed a spider stance, nothing similar to the "Sanibel Stoop," mind you. I'll call mine the "Tarantula Twist." It involves a stick or other implement of choice. While carefully stepping into the forest I simply begin waving my arms about madly, removing spider webs from my path, (always remembering to look up - a lesson I learned the hard way), and contorting my body to avoid the dreaded web in the face. Not only must I worry with what's above me, but as a prudent hiker, I take great care to watch my footing as well. Needless to say, another lesson learned the hard way. Once I established this *modus operandi,* I could explore in a more harmonious manner.

It must be obvious that I have taken some license with my narrative. I wouldn't be here writing this account if hairy, menacing spiders and poison ivy got the better of me. In all seriousness, I did attempt to keep some semblance of scientific data and record keeping. I was eventually quite adept at finding land snails, whether from actual skill or abundance of material remains to be settled.

The habitats I found conducive to snail collecting are as follows: at the base of trees, under rocks and leaves, crawling around on rocky outcroppings, along the creek above the high water mark, and under dead, rotting logs. My exciting and extremely satisfying finds more than met all my expectations and certainly made up for the angst caused by poison ivy and all the gross, disgusting spiders and bugs.

Success at last, maybe? This past January I mailed the specimens collected over the course of the spring and summer of 2003 to Dr. Harry Lee for identification. After waiting impatiently for what seemed like months, I finally received the results of my efforts. I must add here that many of the specimens were dead collected and in poor condition. I applaud Dr. Lee for all his hard work.

Listed in taxonomic order, the species identified are as follows (those illustrated are indicated by brackets []):

*Helicina* (*Olygyra*) *orbiculata* (Say, 1818), globular drop [1]
*Gastrocopta armifera* (Say, 1821), armed snaggletooth [2]
*Haplotrema concavum* (Say, 1821), gray-foot lancetooth [3]
*Anguispira alternata* (Say, 1817), flamed tigersnail [4]
*Anguispira kochi* (Pfeiffer, 1845), banded tigersnail
*Discus patulus* (Deshayes, 1830), domed disc [5]
*Mesomphix vulgatus* H. B. Baker, 1933, common button [6]
*Ventridens collisella* (Pilsbry, 1896), sculptured dome
*Ventridens demissus* (A. Binney, 1843), perforate dome [7]
*Ventridens pilsbryi* Hubricht, 1964, yellow dome
*Euchemotrema fraternum* (Say, 1824), upland pillsnail [8]
*Euchemotrema leai* (A. Binney, 1841), lowland pillsnail
*Inflectarius inflectus* (Say, 1821), shagreen [9]
*Mesodon clausus* (Say, 1821), yellow globelet [taken 9/11/04 on a canoeing trip]
*Mesodon elevatus* (Say, 1821), proud globe [10]
*Mesodon thyroidus* (Say, 1817), white-lip globe [11]
*Mesodon zaletus* (A. Binney, 1837), toothed globe
*Neohelix albolabris* (Say, 1817), whitelip [12]
*Patera appressa* (Say, 1821), flat bladetooth [13]
*Xolotrema obstrictum* (Say, 1821), sharp wedge [14]
*Triodopsis hopetonensis* (Shuttleworth, 1852), magnolia threetooth [15]
*Triodopsis vulgata* Pilsbry, 1940, dished threetooth [16]

Of these twenty-two species, only *Mesodon zaletus* had been recorded from Nelson Co. in the literature, which fact makes the fieldwork seem a bit more worth the hardships endured. I can now tell Gil his snail was a *Mesodon elevatus* (Say, 1821), commonly called a proud globe.

Acknowledgements: I would like to thank Dr. Harry Lee for his encouragement and identification help, Bill Frank for digitally editing the field and shell images, Lynn Scheu for her years of friendship and guidance, my husband Jeff Schroeder for braving the wilds to take photographs and his support of my shell habit, and Mr. Stauble and Mr. Chumbley for the use of their property.

This article is reprinted with slight modifications from an article that appeared in the Shell-O-Gram 46(1):1, 3-4. Jan. Feb. 2005.

**References:**

**Branson, B. A.** 1973. Kentucky land Mollusca. Checklist, distribution, and keys for identification, Kentucky Dept. Fish and Wildlife Resources, Frankfort. pp 1-67 incl. distributional maps.

**Burch, J. B.** 1962. How to know the eastern land snails, W. C. Brown, Dubuque, Iowa. pp. 1-214 + v (unpaginated), numerous text figures.

**Hubricht, L.** 1985. The distributions of the native land mollusks of the Eastern United States, Fieldiana 24(1359): 1-191 + viii. June 28.

**Pilsbry, H. A.** 1939, 1940, 1946, 1948. Land Mollusca of North America north of Mexico, vol. I and II; each with part 1 and 2, Academy of Natural Sciences, Philadelphia, [vol. I, part I (1939) deals only with species pretty much in or west of the Rocky Mts. and is not essential for KY snailing].

**Turgeon, D. D.; Quinn Jr., J. F.; Bogan, A. E.; Coan, E. V.; Hochberg, F. G.; Lyons, W. G.; Mikkelsen, P. M.; Neves, R. J.; Roper, C. F. E.; Rosenberg, G.; Roth, B.; Scheltema, A.; Thompson, F. G.; Vecchione, M.; and Williams, J. D.** 1998. Common and scientific names of aquatic invertebrates from the United States and Canada: mollusks, 2nd edition, American Fisheries Society, Special Publication 26, Bethesda, Maryland, ix + 526 pp., [16] col. pls.

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# Dr. E. Alison Kay (1928 - 2008)

I am very sorry to report about Dr. E. Alison Kay's passing. I just received news from friends in Hawaii (Wes Thorsson, Regie Kawamoto) that Dr. Kay died this morning at a Hospice facility on Oahu, Hawaii. Her health had been declining in the past few years.

Dr. Kay was well known from her book, "Hawaiian Marine Shells" (1979), which remains the bible on marine mollusks for Hawaii and many Pacific islands. She made great contributions to the study of cowries, starting with her Ph.D. dissertation in 1957. One of her last papers on cowries was her *Atlas of Cowrie Radulae* (with Hugh Bradner, 1996), which illustrated all but a handful of species in the family both under the light and scanning electron microscopes.

Besides her interests in molluscan biology, conservation, and taxonomy of both living and fossil mollusks, Dr. Kay was interested in biographical research, especially on malacologists (e.g. Willian Harper Pease, John Gullick), as well as the early history of Hawaii. She taught a very popular class on the Natural History of the Hawaiian Islands, and edited two books on the subject. She was also the editor of *Pacific Science* for some 20 years. She was a Professor of Zoology at the University of Hawaii for several decades, and retired in 2000. She continued to actively teach and research for a few more years, but then her health declined.

She had many undergraduate and graduate students through the years. I was her last student, and she was delighted to mentor me in the study of cowries, her "first love." I was lucky enough to have both her and Dr. C.M. "Pat" Burgess (author of "The Living Cowries" (1970) and "Cowries of the World" (1985)) as my mentors on cowries. They met when she was 13 years old and had broken a bone (leg?); he was the doctor who treated her. During the many sessions of her treatment, they became friends and she got him interested in shells, and especially cowries. Later, they both went on to study and publish on cowries.

She did pioneering work on micromollusks as indicator species for biomonitoring, which still continues at the University of Hawaii. This biomonitoring project has funded many graduate students, including myself, through its decades of operation. She included and described many micromollusks (I think over 70 new spp., besides many others) in her "Hawaiian Marine Shells" book. It encouraged many people to look for and study these tiny shells. Someone at the Hawaiian Malacological Society once joked about her book having contributed to many collectors' poor vision (because of studying microshells).

Dr. Kay was a very special lady, a great mentor and friend. She will be greatly missed.

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**Selected Publications**

Kay, E.A. 1991. The marine mollusks of the Galapagos: determinants of insular marine fauna. In: M.J. James, ed. Galapagos Marine Invertebrates. New York: Plenum Press. pp. 235-252.

Kay, E.A. 1990. The Cypraeidae of the Indo-Pacific: Cenozoic phylogeny and biogeography. Bulletin of Marine Science 47:23-24.

Kay, E.A. 1987. Endemism and evolution in Hawaiian Marine invertebrates. Trends in Ecology and Evolution 2:183-186 (with S. Palumbi).

Kay, E.A. 1987. The Mollusca of Enewetak Atoll, Marshall Islands. In: D. Devaney, E.S. Reese and B. Burch, The Natural History of Enewetak Atoll, Dept. of Energy. (with S. Johnson.)

Kay, E.A. 1984. Patterns of speciation in the Indo-West Pacific. In: F.J. Radovsky, P.H. Raven and S.H. Sohmer, eds. Biogeography of the Tropical Pacific. Assoc. of Systematics Collections and B.P. Bishop Museum. pp. 15-31.

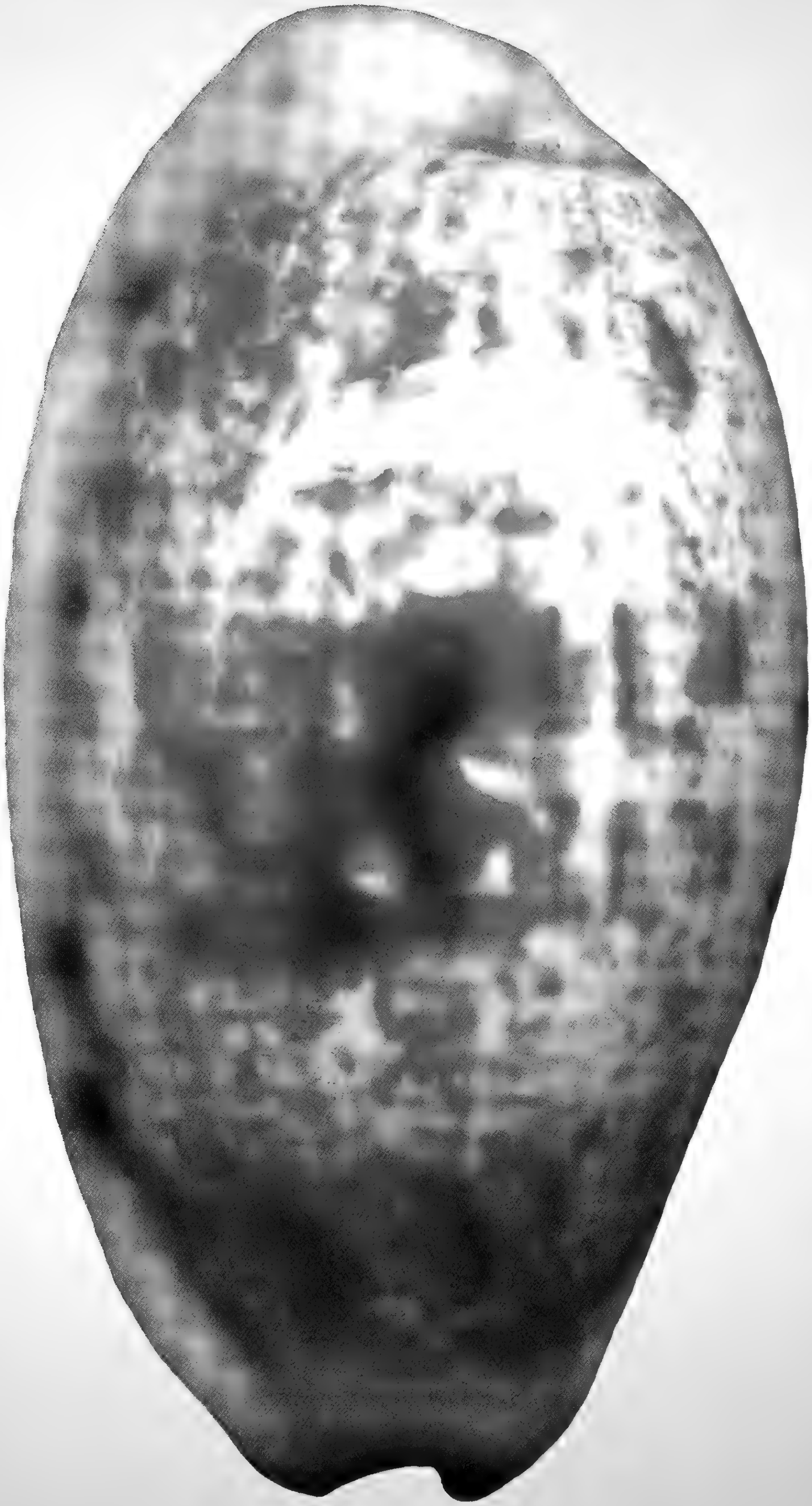
Kay, E.A. 1980. Little worlds of the Pacific. An essay on Pacific Basin Biogeography. Harold L. Lyon Arboretum, University of Hawaii, Lecture No. 9:1-40.

Kay, E.A. 1979. Hawaiian Marine Shells. Reef and Shore Fauna of Hawaii Section 4: Mollusca. B.P. Bishop Museum Press.

Kay, E.A. 1978. Molluscan distribution patterns at Canton Atoll. Atoll Research Bulletin No. 221:160-169.

**Mollusks named for Dr. Kay**

*Flabellina alisonae* Gosliner, 1979
*Trophonopsis kayae* T. Habe, 1981
*Sansonia alisonae* Le Renard & Bouchet, 2000



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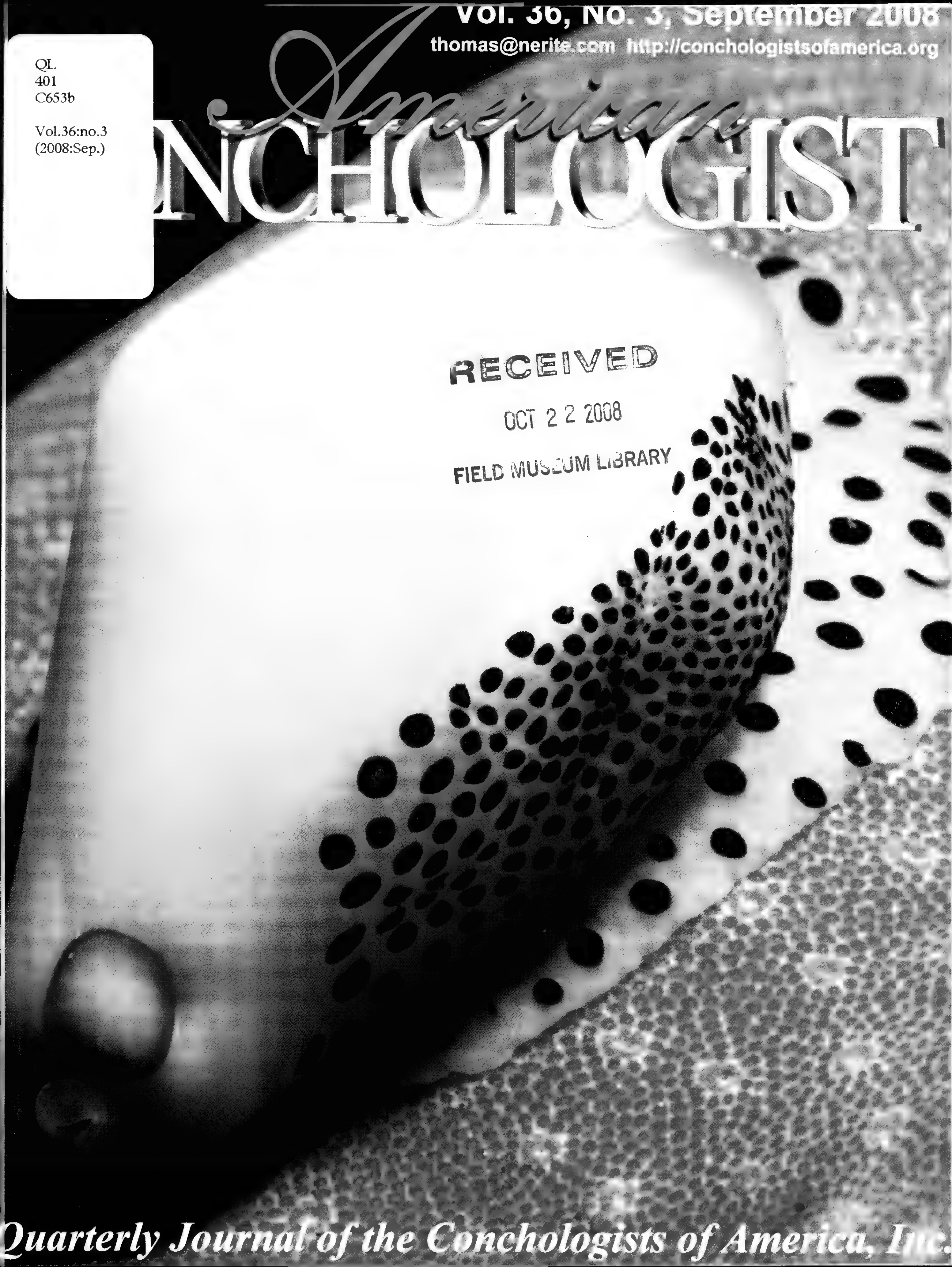
# American CONCHOLOGIST







Quarterly Journal of the Conchologists of America, Inc.

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 36, No. 3 September 2008**


In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***



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**Front cover: the common, shallow-water, Indo-Pacific ovulid *Calpurnus verrucosus* (Linnaeus, 1758) shows some delicate coloring on the shell and a nicely patterned mantle and foot. This image was submitted by Charles Rawlings and was taken at night during his recent diving trip to Indonesia.**

**Back cover: the interesting sculpture of *Neptunea tabulata* (Baird, 1863), 70mm. This is a fairly common buccinid found offshore at moderate depths from California to Canada. Photograph submitted by Guillermo Farregut. Taken with a Nikon F3 camera with a Nikkor 55mm macro lens.**

# COA Academic Grants Program: Academic Grants Director's Report

### Presented on July 6, 2008

The COA Grants Committee consists of Hank Chaney, Gary Rosenberg, and yours truly. The Committee received 31 complete applications in 2008. The applications came from 6 countries: Argentina (6), Brazil, (1), Germany (2), The Netherlands (1), Puerto Rico (1), and United States (20). The pool of applicants included 28 students at differing degrees of academic standing plus 3 non-students.

Twelve grants were awarded, a total of $16,459.78 from the $43,405.38 requested. Countries of origin of grantees are: United States (8), Argentina (1), Germany (1), Netherlands (1), and Puerto Rico (1). Eleven awards were granted to students and one to a professional researcher holding a Masters degree. Of the students receiving awards, eight are PhD candidates and three are MS candidates.

The Walter Sage Memorial Award went to Erin Leigh Meyer, University of California, Berkeley.

The Paul and Heather Johnson Award went to Sancia E.T. Van Der Meij of Naturalis (Natural History Museum), Leiden, The Netherlands

The Clench and Turner Memorial Award (Boston Malacological Society) went to the Andres Averbuj, Universidad de Buenos Aires, Argentina.

The Jacksonville Shell Club Award went to Christy C. Visaggi, of the University of North Carolina at Wilmington.

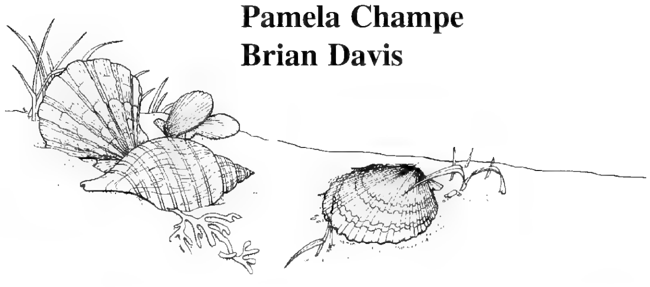
Respectfully submitted,

José H. Leal, Ph.D.
COA Academic Grants Director



**In Memoriam:**

**Pamela Champe**
**Brian Davis**



# CONCHOLOGISTS OF AMERICA 2008 CONVENTION

## SOMBREROS, SHELLS AND SPURS

### By J. M. Inchaustegui

From July 6 to July 10, 2008, the Conchologists of America held their 37th annual convention, in San Antonio, Texas. The convention was sponsored, planned, and run by several cooperating Texas shell clubs, including: Coastal Bend Shell Club, Houston Conchology Society, North Texas Conchological Society, San Antonio Shell Club, Sea Shell Searchers of Brazoria County and South Padre Island Shell Club. They did a great job.

San Antonio is known for the Mission San Antonio de Valero or simply "The Alamo." Spanish friars assisted by Native Americans built this Mission in 1718. The friars converted and baptized these local residents. The Alamo is only one of several missions built in the area to serve the Native American Indians. In February of 1836 some 189 Texians (as the native Texans where called at that time) defied the Mexican army of 1,800 soldiers led by General Antonio Lopez de Santa Anna when the Mexican army demanded the return of a cannon they had loaned to the Texians and they replied defiantly, "You come and get it." Even though the defenders of the Alamo, which included Jim Bowie and Davy Crockett, just two of the many Americans that came to the aid of the Texians, put up a stiff defense and killed hundreds of Mexican soldiers, eventually the defenders were all massacred and died as heroes of the Texas Revolution. That was the start of the Texas War of Independence. The rest is history.

San Antonio has a rich heritage established by the original Native American inhabitants, followed by the French, Spanish, and little known outside of Texas, German Jews. The latter brought to the area their rich culture, their music and their food. The French and Spanish brought their language and their architecture as well as their culture, food, and music.

The COA convention had a silent auction, an oral auction, many bargain tables, raffle sales, a shell show with prizes awarded for "Best of Show" etc., a welcome party, a fiesta banquet, and everyone's favorite, the dealer's bourse. At the bourse, shells could be purchased from a few dollars up to thousands of dollars. My cup of tea, however, were the bargain tables where very nice, cleaned and identified shells could be scooped up for 50 cents each. At these Tables, I "collected" several grocery bags full of shells to replace some of those I lost during Hurricane Katrina.

At the convention there were in attendance nearly 200 members from 14 nations: Argentina, Australia, Bermuda, Brazil, Canada, France, Indonesia, Israel, Italy, Philippines, New Caledonia, South Africa, United Kingdom and the United States. There were attendees from 22 different states, from the east coast to the west coast and points between: Alabama, Arizona, California, Colorado, Florida, Hawaii, Iowa, Kansas, Kentucky, Louisiana, Maryland, Minnesota, Missouri, Nebraska, New Jersey, New Mexico, New York, North Carolina, Ohio, Pennsylvania, Texas, and Washington. My state of Louisiana was well represented by Dr. Emily Vokes, Dr. Emilio Garcia, Dr. Cecil Bankston, Rusty Williams and the author, now transplanted to Texas.

Thirty-three dealers participated in the dealer's bourse, with long tables filled with beautiful shells, some strange looking cowry freaks, many golden cowries, and numerous rare shells. I especially enjoyed the shells presented by Al & Bev Deynzer of Showcase Shells of Sanibel, Florida, and Israel Yeroslavsky from far away Israel. Another excellent presentation was that of Phillippe Quinquandon of Shells Passion from Mouans Sartoux, France. The beauty of these displays can only be fully appreciated by actually seeing them.

The dealers were: Lufkin Cutting Edge Design LLC, Carlos Estevez, Worldwide Specimen Shells, Lone Star Shells, Algoa Bay Shells, Sue Hobbs Specimen Shells, Mal de Mer Enterprises, Robert Lipe Specimens, Australian Seashells PTY LTD, Don Pisor, Shells Passion, Sea Treasurers, Chuck Reitz, San Antonio Shell Club, Stephen M.T., Private Shell Collection.com, Hawaiian Shells, Shelltrips.com, Sealifehawaii, Jeff Whyman, Israel Yeroslavsky, Darwin's Shells, Randy Allemand Shells & Stuff, Patagonia Shells, Tidelines/Caledonian Seashells, Blue Crab Studio, Femorale Ltd, Shell-gifts/HARF Natural History Books, Bruce Crystal, Donald Dan, Capensis Sea Shells, Showcase Shells, Vic-Mar Shells Specimen Trading, and Mal de Mer Enterprises.

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# Small Western Atlantic Buccinidae. Part 2. The Genus *Antillophos* Woodring, 1928

### By G. Thomas Watters (images by the author)

This is part two of a series on the western Atlantic buccinids. Part one, on *Bailya*, appeared in *American Conchologist* 35(3) in 2007. This series is taken from a much larger and more formal revision, now nearly complete, to be published elsewhere (I hope!). As always I welcome any feedback, corrections, and records.

The genus *Antillophos* Woodring, 1928, is undoubtedly the most confused of the genera I will present – but for no apparent reason beyond the fact that seemingly no one has bothered to examine the type material. Although some types have been lost, others are juveniles, and a few are somewhat the worse for wear, the species are, by and large, easily separable. Yet misidentifications abound in the literature. To quote the great comic troupe Firesign Theatre, "everything you know is wrong." In addition, recently numerous Philippine species have been assigned to *Antillophos* but those taxa differ in sculptural and protoconch details; they may belong elsewhere. *Antillophos* may be an New World group.

Species of *Antillophos* occur in fairly deep water out of the range of most collectors, usually in more than 100m of water. A few are quite rare (or at least rarely seen) but some, such as *A. candeanus* (d'Orbigny, 1842) and *A. virginiae* (Schwengel, 1942), are common in the proper habitat - over 50 have been taken in a single dredge haul. Specimens are becoming more common on dealers' lists, including some genuinely rare species if the informed buyer knows his or her identifications.

The taxa I recognize are discussed below. I am grateful to the staff of the Florida State Museum (UF) and Dr. Harry Lee for supplying some of the figured specimens.

*Antillophos bahamasensis* Petuch, 2002. This problematic species is known only from the type material off Bimini at ca. 35m. The type is somewhat faded and weathered, 18mm in length (Fig. 1). It resembles the widely distributed *A. chazaliei* (Dautzenberg, 1900) and when more material becomes available it may prove to be synonymous.

*Antillophos oxyglyptus* (Dall & Simpson, 1901) (Fig. 2). A very rare species recorded from Puerto Rico, the Colombian coast, and Barbados in depths to 200m (but all dead shells), it most closely resembles *A. virginiae* in its compact shape, medium size (average 20mm), tendency to have columellar denticles, and pustulose sculpture, but occurs at the other end of the Caribbean. *A. virginiae* is found off south Florida and the Gulf of Mexico. *Antillophos bayeri* Petuch, 1987, is a synonym.

*Antillophos beaui* (Fischer & Bernardi, 1860) (Fig. 3). This beautiful species is easily recognized by its large size (average 29mm, up to 32mm), elongate shape, dark protoconch, and polished surface. It has a much wider distribution than commonly thought, from Florida throughout the Antilles to Colombia; it is best known from Barbados. Live specimens have been taken at 170-200m.

*Antillophos candeanus* (d'Orbigny, 1842) (Figs. 4, 5). This is a Caribbean species ranging from south Florida throughout the Antilles and the Bahamas to Colombia. It occurs in fairly shallow water from 8-40m. It is medium-sized (average 24mm), bullet-shaped, with coarse serrate sculpture. *Phos antillarum* Petit, 1853, is the same. The name "*candei*" (an unjustified emendation) has been misapplied to nearly every species of *Antillophos* mentioned from the western Atlantic. In particular *Antillophos candeanus* is generally confused with *A. virginiae*, which has more pustulose sculpture. Both species occur in south Florida but *A. virginiae* is found in the Gulf of Mexico rather than the Caribbean (and *vice versa*).

*Antillophos chazaliei* (Dautzenberg, 1900) (Figs. 6, 7). Despite its wide range throughout the Gulf of Mexico and the Caribbean, this is largely a forgotten species, usually written off as "*candei*." It is a diminutive species (only ca. 13mm as an adult) that resembles a miniature *A. candeanus* but is much more distinctly patterned than that species and more widespread in its range. Live specimens have been recorded from 50-200 m.

*Antillophos smithi* (Watson, 1885) (Fig. 8). This is one of the rarest *Antillophos* and certainly the most obscure. The holotype is a sub-adult, weathered shell collected by the *H.M.S. Challenger* off Brazil and the specimen does not do justice to this otherwise elegant species. It resembles *A. beaui* in its size (average 28mm, up to 37mm) and elongate shape but differs in its finely pustulose sculpture. It is known from only a few widely scattered records ranging from the Bahamas (as *A. freemani* Petuch, 2002), Honduras, and Barbados to Colombia and Brazil; live individuals have been found in 150-260m. It occasionally is sold as "*elegans* Guppy, 1866," a *nomen dubium*.

*Antillophos virginiae* (Schwengel, 1942) (Figs. 9,10). This distinct species has suffered from Abbott's synonymizing it with "*candei*" in the 2nd edition of *American Seashells*; in fact Abbott's illustration is not of *A. candeanus* but is *A. virginiae*. Although similar to *A. candeanus*, this species has pustulose rather than serrate sculpture. While both species overlap in southern Florida, *A. virginiae* is a Gulf species whereas *A. candeanus* is a Caribbean one. *Antillophos virginiae* tends to occur in deeper water (60-130m) than *A. candeanus*. It is commonly dredged off Palm Beach and Tampa.

*Antillophos* sp. (fig. 11). This is an undescribed species currently known only from the Guajira Peninsula of Colombia in ca. 40m of water. It differs from *A. candeanus* in its thinner shell, more capacious aperture, and more numerous axial ribs. Most examples are in private hands and I would welcome the opportunity to study additional material.

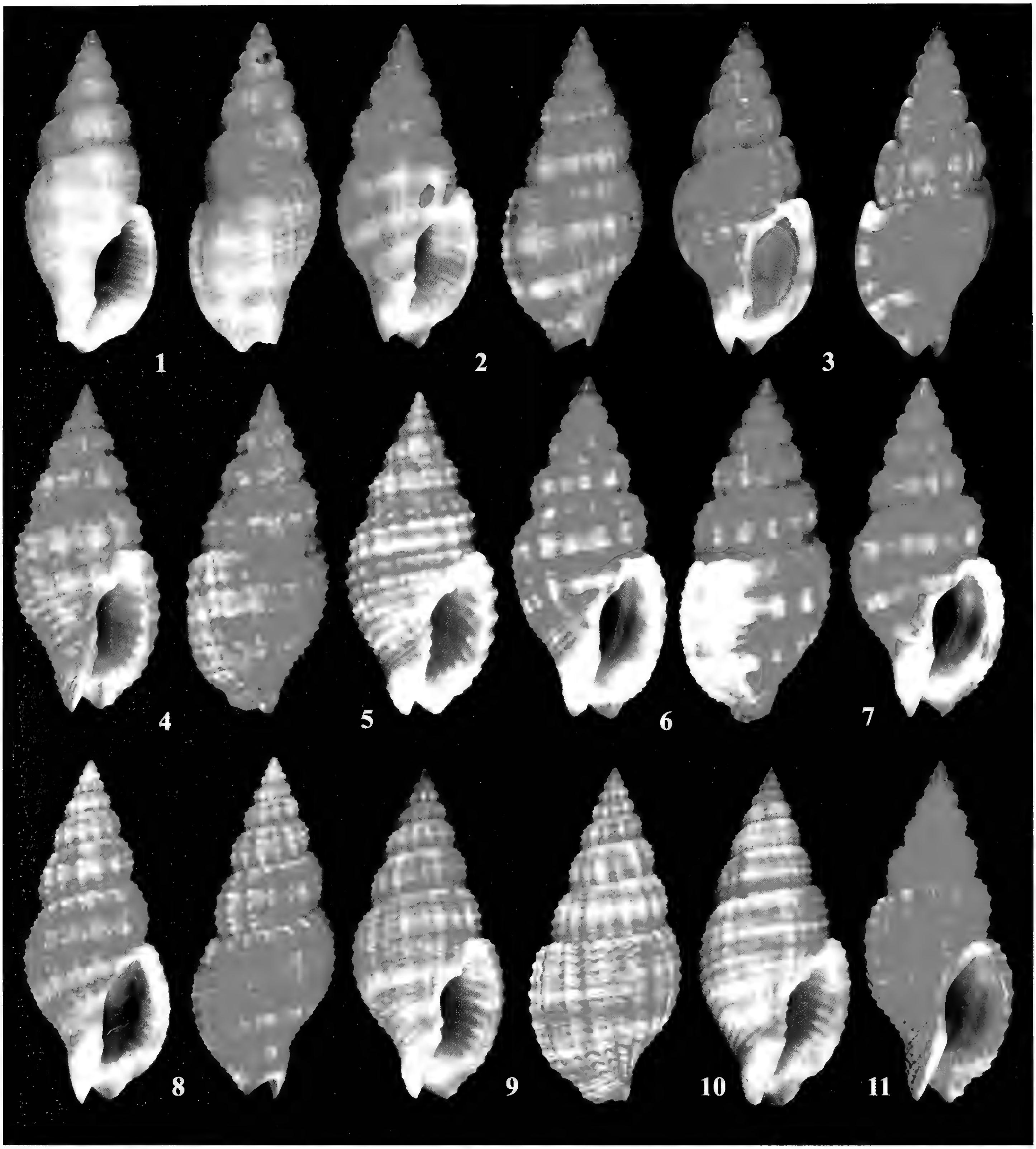


Fig. 1. *Antillophos bahamasensis* Petuch, 2002, holotype UF 277198, off Victory Cay, Bimini Chain, Bahamas, 18mm.
Fig. 2. *Antillophos oxyglyptus* (Dall & Simpson, 1901), 167-200m, W Sandy Lane Bay, Barbados, 24.3mm.
Fig. 3. *Antillophos beaui* (Fischer & Bernardi, 1860), 167m, W Barbados, 30.7mm.
Figs. 4, 5. *Antillophos candeanus* (d'Orbigny, 1842). Fig. 4. 60m, off Matanzas, Matanzas Province, Cuba, 31.8mm. Fig. 5. Puerta Plata, Dominican Republic, 30.1mm.
Figs. 6, 7. *Antillophos chazaliei* (Dautzenberg, 1900). Fig. 6. 40m, Isla Los Monjes, Colombia, 16.7mm. Fig. 7. 37-46m, Islas Los Testigos, Venezuela, 15.3mm.
Fig. 8. *Antillophos smithi* (Watson, 1885), 230-260m, off Roatan Island, Honduras, 30.4mm.
Figs. 9, 10. *Antillophos virginiae* (Schwengel, 1942). Fig. 9. 84m, south of Marquesas Keys, Florida, 22.5mm. Fig. 10. 233m, southeast of Alligator Reef Light, Monroe Co., Florida, 28.0mm.
Fig. 11. *Antillophos* sp. 40m, trawled, Punta Espada, Guajira Peninsula, Colombia.

Coming up next in the series: the elegant species of *Monostiolum* and the mysterious genera *Cumia*, *Caducifer*, and *Parviphos* explained.

**Literature cited:**

**Dall, W. H. & Simpson, C.T.** 1901. The Mollusca of Porto Rico. *U. S. Fisheries Commission Bulletin* 20:351-524, pls. 53-58.

**Dautzenberg, P.** 1900. Croisières du yacht *Chazalie* dans l'Atlantique. Mollusques. *Mémoires de la Société Zoologique de France* 13:145-265, pls. 9, 10.

**Guppy, R.J.L.** 1866. On the Tertiary Mollusca of Jamaica. *Quarterly Journal of the Geological Society of London* 22:281 -294, pls. 16-18.

**d'Orbigny, A.** 1842. *Mollusques. Histoire Physique, Politique et Naturelle de l'île de Cuba* 2:1-112, pls. 10-21.

**Petit de la Saussaye, S.** 1853. Notice sur le genre *Phos* de Denys de Montfort, avec la description de deux espèces nouvelles. *Journal de Conchyliologie* 4:235-245.

**Petuch, E.J.** 1987. *New Caribbean molluscan faunas*. Coastal Education & Research Foundation, Charlottesville, VA. 154 + A2 pp.

**Petuch, E.J.** 2002. New deep water gastropods from the Bimini Shelf, Bimini Chain, Bahamas. *Ruthenica* 12:59-65, figs. 1, 2.

**Schwengel, J.S.** 1942. New Floridian marine mollusks. *Nautilus* 56(1):pl. 3, figs. 1, 1a, 4, 6-8 [July]; 56(2):pl. 6, fig. 3 [Oct.]; 56(2):62-66 [Oct.].

**Woodring, W.P.** 1928. Miocene mollusks from Bowden, Jamaica. 2. Gastropods and discussion of results. *Contributions to the Geology and Paleontology of the West Indies*, Carnegie Institute of Washington, 459 pp.

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# Imperiled Seashells

## By Karla Cisneros

The beautiful seashells we collect and study, and the fascinating animals that create and inhabit them, are only part of the story. We must remember that each shell is also part of an inter-linking and inter-dependant ecological system. The most important role these fascinating creatures play just might be as an integral part in the health of the world's marine environments. Because mollusks as well as their eggs and young are a major source of food for so many other species in the marine food chain, they play an essential role in maintaining the integrity of countless ecosystems.

The health of the oceans is inextricably tied to the quality of all life on land. It is widely known that the world is roughly 70% water (as is the human body). In 2003, a chemical oceanographer at the Carnegie Institution of Washington first documented that the carbon footprint we as humans are leaving on our water planet is resulting in a change of the ocean's chemistry. We are currently pouring manmade carbon dioxide ($CO2$) into the atmosphere at 50 times the natural rate. Our seas are soaking up much of this excess $CO2$ and are becoming more acidic.

There is now growing awareness and alarm that, at current rates of change, the acidity of seawater in the next century will increase enough to dissolve the calcium carbonate shells of sea creatures. This could mean that shelled-mollusks and reef-building corals will die. Mollusks, hard corals, crustaceans, plankton, and other microscopic organisms are in danger, as are the larger animals sustained by them. The magnitude of the environmental change underway is profound. The oceans that divide and separate the continents also connect us all. It is imperative that we work together to alter human behavior and drastically reduce the amount of $CO2$ we produce.

Communication, cooperation, and education are our best tools. The next time you see a list of suggestions on how to reduce your personal carbon footprint, think seriously about what you can do to help. The actions to reduce the carbon footprint by each individual are a step in the right direction, but altered human behavior must happen at a much larger scale. We have an opportunity as a community of shell lovers to raise public awareness, build support for ocean saving strategies, and influence policy makers. In today's world, a true appreciation of seashells mandates a commitment to the protection and conservation of our oceans.

***Related Article***

All those who care about shells and the health of our oceans should read the important article on ocean acidification that appeared in the July 2008 issue of *Discover Magazine*: http://discovermagazine.com/2008/jul/16-ocean-acidification-a-global-case-of-osteoporosis.

# An extension of the genus *Spinosipella* (Bivalvia: Verticordiidae) in the Gulf of Mexico

By
Emilio Fabián García

Species assigned to the genus *Spinosipella* Iredale, 1930, are deepwater bivalves that have a prickly surface, strong, usually sharp, radial ribs that extend beyond the shell margin, and strongly convex valves with a spiral lateral profile resembling that of the unrelated genera *Glossus* and *Meiocardia*. The genus *Spinosipella* has been placed in Verticordiidae, a family of carnivorous bivalves that usually inhabit deep water. In the past some authors have treated *Spinosipella* as a subgenus of *Verticordia*, but recent authors have placed it at the original genus level.

The single North American species in *Spinosipella* has been *S. acuticostata* (Philippi, 1844). Abbott (1974: 563) lists it as *Verticordia acuticostata* Philippi, 1844, and lists it as inhabiting southern Florida and the West Indies. Turgeon et al. (1998: 52-53) do not include this species in their list of United States mollusks; presumably because their species list has a depth limit of 200m and they question the 71-fathom record given by Abbott (see Turgeon et al., 1998:199).

*Verticordia acuticostata* is the epithet given by Philippi to a fossil species of the Pliocene of Italy. Until recently, malacologists believed that a species dredged in deep water off southern Florida, the Caribbean, and Brazil, was conspecific with Philippi's taxon; in a recent paper in which the genus *Spinosipella* is revised, however, Simone and Cunha (2008) have separated *Spinosipella acuticostata* from the American species, which they name *Spinosipella agnes*. According to the authors, the species has a distribution from Cape Canaveral, east Florida, to Rio de Janeiro, Brazil, in 270-900m; but Dall (1881: 105; 1886: 288) records *Verticordia acuticostata* from as shallow as 84 fathoms (154m).

In the Gulf of Mexico specifically, Simone and Cunha report *Spinosipella agnes* from Sand Key (24° 27.50'N, 81° 52.46'W) and the Marquesas Keys (24° 34.19' N, 82° 07.10'W), situated at the west end of the Florida Keys. In the additional "Material examined" they also report two valves of a *Spinosipella* from off Cape San Blas, northwest Florida. Because of the condition of the specimens and the possibility of extreme variability in the taxon, the authors could not definitely identify these specimens as *S. agnes*.

During a dredging expedition in Bahía de Campeche, Mexico, in June 2005 I obtained two well-preserved valves of a verticordiid species that I could not identify (EFG 26772). Upon reading Simone & Cunha's paper I consulted the senior author, who confirmed that the species was *Spinosipella agnes* (fig. 1). The specimens were extracted from sediment dredged at 22°47.17'N, 90°15.97'W, in 350m, and constitute the westernmost record for the species and a new record for the SW quadrant of the Gulf of Mexico.

I also sent Dr. Simone an image of a single valve of a shell (EFG 27889) similar to *S. agnes* dredged in June, 2006, off Alabama, at 29°19.62'N, 87°46'W, in 97-108m (fig. 2). It differs from the Campeche specimens in that it has 19 (*vs* 14) radial ribs, and its umbonal cavity is smaller, resembling the Indo-Pacific *Spinosipella deshayesiana* (Fischer, 1862). As was the case with the Cape San Blas shells, Dr. Simone could not give an exact determination of the identity of the specimen, as the full variability of *S. agnes* has not yet been established and these differences could be of intraspecific value only. Dall also expressed the problem of

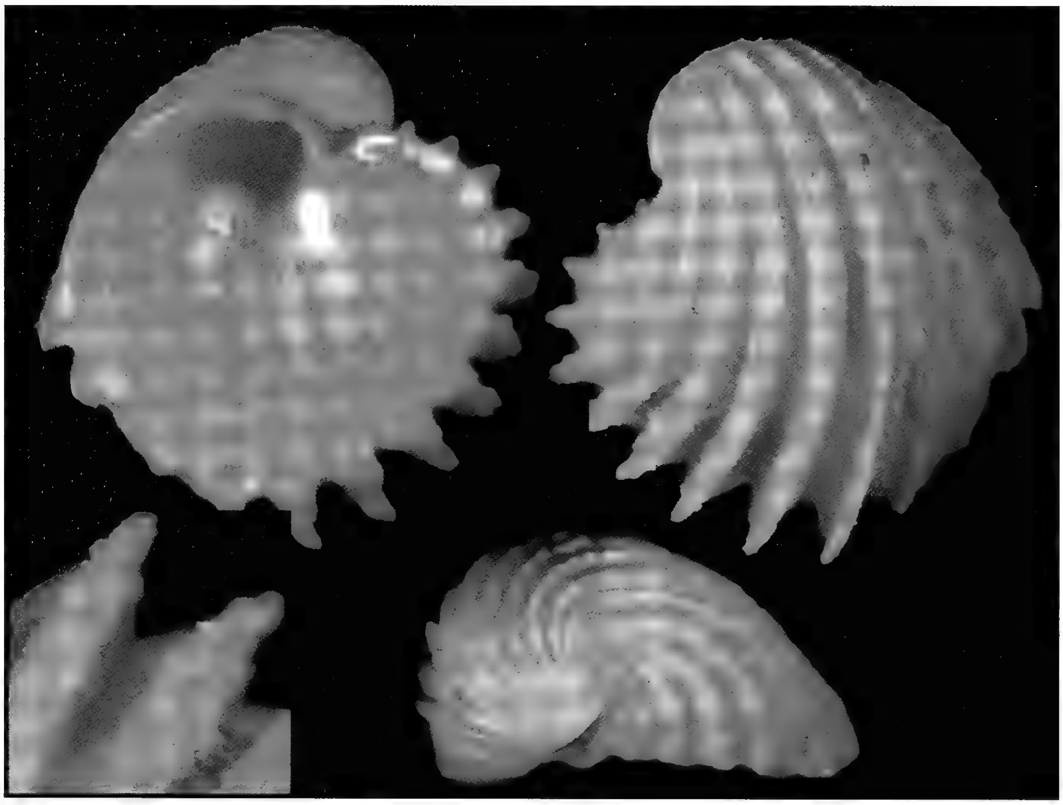

**Figure 1: *Spinosipella agnes* Simone & Cunha, 2008, Bahía de Campeche, southwestern Gulf of Mexico: 22°47.17'N, 90°15.97'W, in 350m, 10.4mm (EFG 26772).**

the variability of *Verticordia acuticostata* a century and a quarter earlier, when he wrote: "specimens enough are at hand to show that the shell has a larger amount of variation than the few specimens in cabinets have led authors to suspect…; my specimens have from fourteen to seventeen ribs, which may be stronger or weaker, finely or more sharply granulated, more or less markedly denticulate in the margin" (1881: 105-106) (Also, see *Note).

Notwithstanding the specific status of the Cape San Blas and Alabama shells, we should take note of this interesting northeastern Gulf of Mexico form, and of the fact that *Spinosipella* has now been reported from three of the four quadrants of the Gulf of Mexico. The odds are that *Spinosipella* is also represented in the northwest quadrant.

*Note: The paragraph that follows Dall's comments on the variability of the shell of *Verticordia acuticostata* deals with his assessment of *Verticordia japonica* A. Adams, 1862, and, presumably, *V. multicostata* A. Adams, 1862. Dall shows his frustration when he writes: "The descriptions of Mr. Adams are quite insufficient to identify any species by. No measurements are given, the number of ribs is not even stated, and the only differences of any value between his diagnoses of the two forms he names are, that one is 'convexa' with 'costis multis subdistantibus,' while the other is 'subcompressa' with 'costis numerosis confertis.' Such descriptions are rubbish, and a detriment to the progress of science. Yet the fact that they are in Latin gives them for some 'conservative' writers a great charm, though they are perfectly useless for any practical purpose"(1881:106). I think most of us have been in the same boat at one time or another, and clearly understand Dall's frustration

**REFERENCES:**


**Abbott, R.T.** 1974. American Seashells: The Marine Mollusca of the Atlantic and Pacific Coasts of North America, Second Ed. Van Nostrand Reinhold Company, New York, NY., 663 pp.

**Dall, W.H.** 1881. Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico (1877-79), and in the Caribbean Sea (1879-80), by the U.S. Coast Survey Steamer "Blake", Lieut.-Commander C.D. Sigsbee, U.S.N., and Commander J.R. Bartlett, U.S.N., commanding. XV. Preliminary report on the Mollusca. Bull. Mus. Comp. Zool. 9(2) 33-144.

**Dall, W.H.** 1886. Report on the results of dredging, under the supervision of Alexander Agassiz, in the Gulf of Mexico (1877-78) and in the Caribbean Sea (1879-80), by the U.S. Coast Survey Steamer "Blake", Lieut.-Commander C.D. Sigsbee, U.S.N., commanding. XXIX. Report on the Mollusca. Part 1. Branchiopoda and Pelecypoda. Bull. Mus. Comp. Zool. at Harvard College, 12:171-318, pls. 1-9.

**Simone, L.R.L., and C. M. Cunha**. 2008. Revision of the genus *Spinosipella* (Bivalvia: Verticordiidae) with descriptions of two new species from Brazil. The Nautilus 122(2): 57-78.

**Turgeon, D.D, J.F. Quinn, Jr., A.E. Bogan, E.V. Coan, F.G. Hochberg, W.G. Lyons, P.M. Mikkelsen, R.J. Neves, C.F.E. Rober, G. Rosenberg, B. Roth, A. Scheltema, F.G. Thompson, M. Vecchione, and J.D. Williams.** 1998. Common and scientific names of aquatic invertebrates from the United States and Canada: mollusks, 2nd ed. American Fisheries Society, Special Publication 26, Bethesda Maryland, 526 pp. + CD



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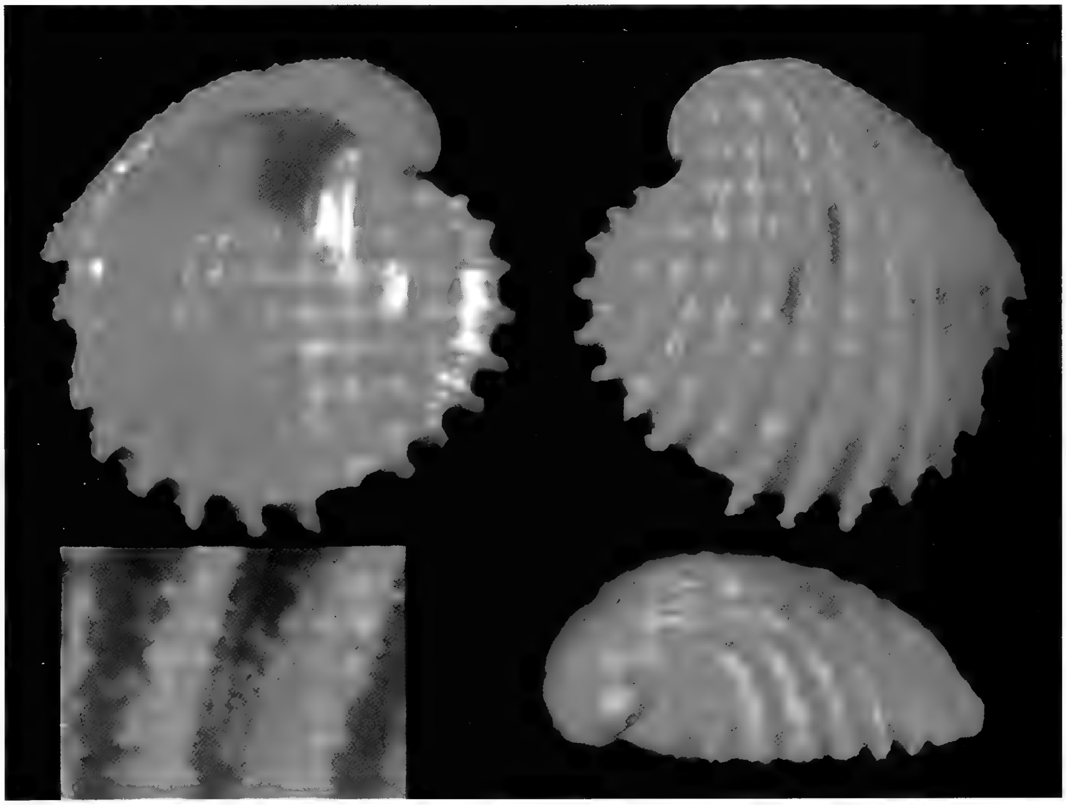


**Figure 2: *Spinosipella* cf. *S. agnes* Simone & Cunha, 2008, off Alabama: 29°19.62'N, 87°46'W, in 97-108m, 7mm (EFG 27889).**

# COLLECTING TRIP TO THE SKELETON COASTAL PARK IN NAMIBIA

## By Werner Massier

**The Bushmen of Namibia call the region "The Land God Made in Anger," while Portuguese sailors once referred to it as "The Gates of Hell."**

Welcome to the Skeleton Coast, 1,500km$^2$ of rugged unspoiled territory in northern Namibia. Home to spectacular beauty and wildlife, it was once covered with bleached whale and seal bones, but is now dotted with ghostly shipwrecks, testimony to the unforgiving Atlantic stretch that gives this coast its name.

In April 2008, the Namibian Ministry of Fisheries and Marine Resources invited me to participate in a field trip to this isolated area. I jumped at the opportunity, as this part of the Namib Desert is notoriously hard to access. Its 1.6 million hectares have been declared a national park and are divided into two zones: the southern section, between the Ugab and Hoanib rivers, and the northern section between the Hoanib and Kunene rivers. The northern part is a designated wilderness area and can only be entered after obtaining a rather exclusive permit.

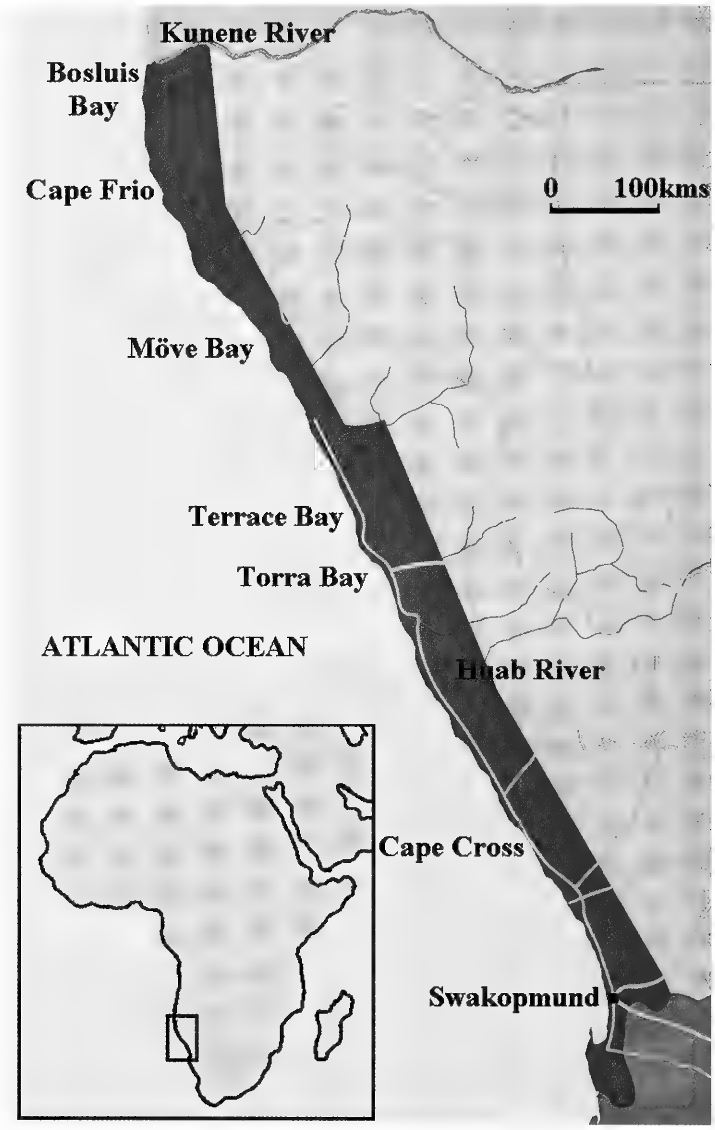
Our journey began in the quaint German colonial town of Swakopmund. We traveled 170km northwards on a well-maintained salt road and then wound our way along a sand road for a further 280km to Möve Bay. From here we ploughed our way patiently through an orange sea of windswept sand dunes and lichen-strewn gravel plains. The route is treacherous and should not be attempted without a reliable 4x4 vehicle.

We made up time at low tide by traveling on the beaches. Although this was the most comfortable and fastest way to drive, it did clash with prime shell collecting times! An amazing array of sea- and shorebirds live along this coast, attracted by the Atlantic's nutrient-rich Benguela current. A colony of cape fur seals (*Arctocephalus pusillus*) can be found at Torra Bay, while roughly 20,000 migratory seals frequent Cape Frio. Strictly speaking this is not a colony, as the seals don't breed here, but use the area as a resting place after feasting on abundant fish resources.

In the northern region, ghost crabs (*Ocypode africana*) have colonized the beaches. Alerted by the vibrations of the approaching cars, they leave their burrows by the millions, rushing frantically towards the sea. The ocean provides a smorgasbord of delights for black-backed jackals (*Canis mesomelas*), but the cheeky creatures still entered our camp. Every morning we found their tracks winding way through our camp and between our sleeping bags. While we slept, they helped themselves to whatever unsecured items took their fancy.

Brown hyaenas (*Hyaena brunnea*) were a lucky find. They are one of Africa's rarest large carnivores and extremely shy. Beware of lions in the riverbeds! Although this area is not their natural habitat, an exceptional rainy season inland allowed rivers to plough their way to the sea, creating arteries of life in the desert. Here springbok and oryx graze on the fresh growth in the riverbeds and along the riverbeds. This, of course, attracts the lions. Sadly, we didn't find a single leatherback turtle.

Considering that the Skeleton Coast is a transitional area between the southern and western African zones, I expected some




interesting mollusk finds. The upwelling seawater with abundant nutrients should contribute to great species diversity, but the reality was disappointing. There are endless stretches of sandy beaches with only the occasional rocky outcrop. Furthermore, the coastline is almost entirely straight, with no real bays. As a result, waves pound the shoreline, and there are no rocks to turn over, hardly the home of choice for mollusks. In fact, the vast 700km shoreline yielded only 37 species.

Bosluis Bay (17°19.39'S 11°45.30'E) was the northernmost collecting point, but the name "bay" is somewhat misleading. There are few rocks, but beach collecting was rewarding and the location was one of the most productive visited. A few kilometers north is the mighty Kunene River. This perennial

**Bosluis Bay: south of the Kunene River that forms the border between Namibia and Angola.**

**Rocky Point: for many miles the only rocky area. A good spot for live fissurellid sp.**

**Möve Bay: plenty of rocks but none one can turn over.**

**Ghost Crabs: ghost crabs dominate the beaches of northern Namibia.**

**Seals: cape fur seal colony at Cape Frio.**

***Diodora* sp.: not the South African *D. parviforata*, which is much smaller and has a different sculpture.**

river forms the border between Angola and Namibia. To my great disappointment, the area, with its unique collection of wildlife, is sealed off by diamond mine private property.

Considering the close proximity to Angola, there was a strange absence of Angolan and west African species. I can only assume that the Kunene River's sand and mud deposits form an insurmountable barrier, preventing most species from spreading further south. Six species from further north were found: *Medusafissurella chemnitzii, Patella safiana, Charonia lampas lampas, Bufonaria marginata, Siphonaria pectinata,* and *Petricola angolensis*, a species endemic to Angola and Namibia. The keyhole limpet *M. chemnitzii* grows to an astounding size here. The largest specimen I found measured 59mm, far above the registered world record. Having collected shells in southern Angola recently, not far north of the Namibian border, it was indeed strange not to find any of the species I had previously encountered. Conspicuously absent were the many Conidae species I found further north.

I could not find a single *Patella natalensis*, which is found in abundance in southern Angola. In spite of its name, it truly seems to be endemic to Angola, and it cannot be grouped with *Patella granularis*. There are significant morphological differences. All other shells I found at Bosluis Bay belong to the southern African region. I was surprised to find the nassariid species *Demoulia ventricosa* so far north. The few rocks emerging from the sand hosted some giant *Patella safiana*, up to 115mm in size! This species is completely covered in algae, so it was only after cleaning them upon my return that I realized I had in fact collected two different species, including a new species. As they share the same geographical area and the same habitat, and not a single intergrade could be found, I will describe this as a new species in due course.

The next southern collecting point was Cape Frio (18°26.02'S 12°00.22'E). This was the most northern record for *Littorina knysnaensis, Littorina punctata* and *Thais haemastoma*. The following night was spent at Rocky Point (18°59.83'S 12°28.62'E), a large rocky outcrop. There was little growth here and it yielded only a limited number of species, including live *Medusafissurella chemnitzii* and *Fissurella mutabilis* in shallow, flat rock pools. In the evening, a strong southwesterly wind sprang up and the night was bitterly cold. The next morning bright sunshine and a calm, clear day greeted us once again.

Travelling south, we arrived at Möve Bay (19°22.40'S 12°42.34'E), which houses a permanent camp of the Nature Conservation Department. Although it's a bit disappointing as a bay, it does offer plenty of rocks - and jackals! Möve Bay is the most northern location for *Patella argenvillei*, a well known South African species that lives side-by-side with *Patella safiana*. *P. argenvillei* is quite common in southern Namibia, but rare from the central regions of the country northward. I certainly didn't expect to encounter this species this far north. Möve Bay is also the most northern record for *Natica vittata textilis*.

Our next stop was Terrace Bay (20°07.71'S 13°02.08'E), a paradise for fishermen but a nightmare for shell collectors. Large pebbles are rolled up and down the beach by huge waves, crushing everything in their path. The noise alone can kill any attempt at conversation. Only two species seem to survive this harsh environment: *Thais haemastoma* and *Siphonaria pectinata*.

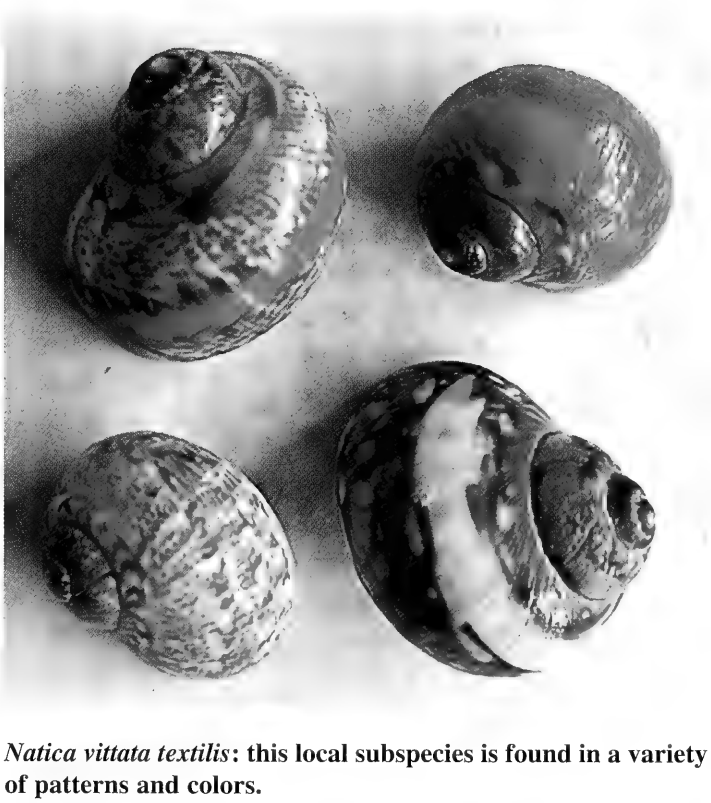
Torra Bay (20°19.40'S 13°14.42'E) is not far south of Terrace Bay and was slightly more mollusk-friendly. The true *Patella safiana* can still be found here. Further south it seems to interbreed with *Patella miniata* and they are often difficult to positively identify.

At our next stop, the mouth of the Huab River (20°56.40'S 13°37.37'E), huge diamond mining activities have altered and completely destroyed what had been an usually picturesque area. Beach collecting produced a member of the family Epitoniidae, a first for Namibia! The specimen is 19mm long, with thin, low, and distantly placed costae. It has eluded all of my identification attempts.

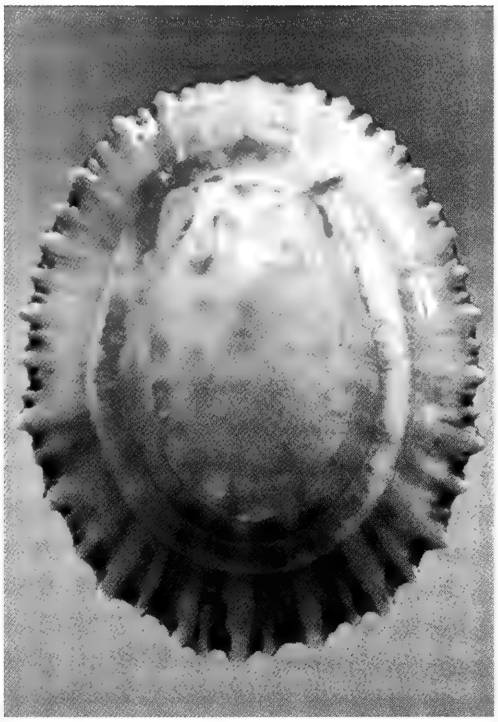
After spending a night along the riverbed under a breathtaking canopy of stars, including the famous Southern Cross and several satellites hurrying from horizon to horizon, we were suddenly hit by a warm wind. It was like switching on a heater, as the temperature shot up from one second to the next. The east wind from the inland desert had arrived.

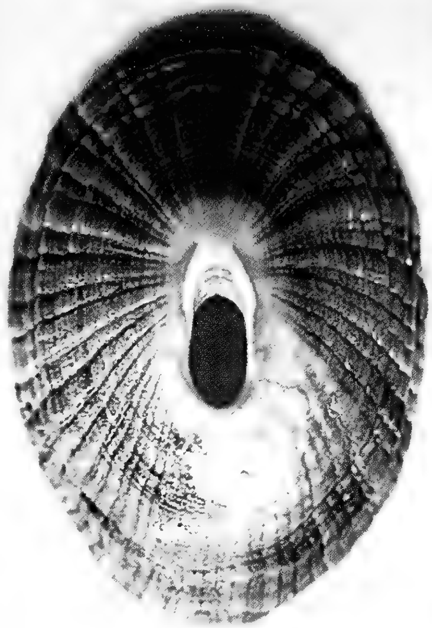
On the way to the next collecting point at Cape Cross (22°03.57'S 14°12.46'E) we ventured into a sandstorm, which left even the interior of our cars blanketed in fine sand. Luckily it lasted for only 30kms. Temperatures approached a merciless 40°C (104°F). Cape Cross is the famous breeding ground for the cape fur seal. The colony (apparently the largest in Africa) lies outside the Skeleton Coast Park. Cape Cross is where the first Europeans landed on Namibian soil. Tourists from all over congregate here. Most are lobster pink, having underestimated the African sun. Shelling here is not particularly interesting, but I was surprised to find the cultellid *Phaxas decipiens* so far north.

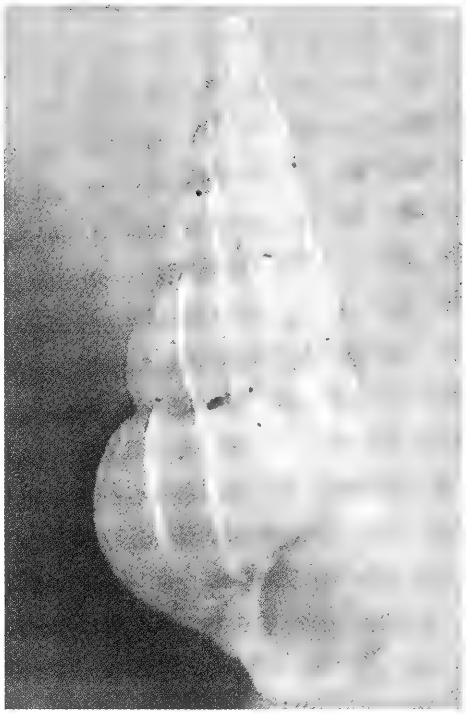
All in all it was a very enjoyable journey. Luckily not one car broke down, a serious problem when you are so far from civilization. Landscapes were breathtaking and as there are no permanent inhabitants, it should remain a totally unspoiled coastal desert paradise, were it not for the devastating consequences of the local diamond mines. Sadly, the spectacular fauna and flora don't fetch quite the same lucrative price on international markets.



***Natica vittata textilis*: this local subspecies is found in a variety of patterns and colors.**







**Left: *Patella safiana* Lamarck, 1819. This is the genuine *P. safiana*. It grows to enormous proportions in northern Namibia.**
**Center: *Medusafissurella chemnitzii* (Sowerby, 1862). *M. chemnitzii* reaches into Namibia from Angola. Massive sizes that are much bigger than the registered world record size can be found.**
**Right: *Epitonium* sp. This is the first member of the family Epitoniidae found in Namibia.**

Species found:
GASTROPODA
**Fissurellidae**
*Diodora* sp.
*Fissurella mutabilis* Sowerby, 1834
*Medusafissurella chemnitzii* (Sowerby, 1862)
**Patellidae**
*Patella argenvillei* Krauss, 1848
*Patella granularis* Linné, 1758
*Patella miniata* Born, 1778
*Patella safiana* Lamarck, 1819
*Patella* sp. nov.
**Trochidae**
*Oxystele variegata* (Anton, 1839)
**Littorinidae**
*Littorina knysnaensis* (Philippi, 1847)
*Littorina punctata* (Gmelin, 1791)
**Calyptraeidae**
*Crepidula porcellana* Lamarck, 1801
**Naticidae**
*Natica vittata textilis* Reeve, 1855
**Bursidae**
*Bufonaria marginata* (Gmelin, 1791)
**Ranellidae**
*Charonia lampas lampas* (Linné, 1758)
**Epitoniidae**
*Epitonium* sp.
**Muricidae**
*Thais haemastoma* (Linné, 1767)
**Nassariidae**
*Bullia callosa* (Wood, 1828)
*Bullia laevissima* (Gmelin, 1791)
*Demoulia ventricosa* (Lamarck, 1816)
**Siphonariidae**
*Siphonaria pectinata* (Linné, 1758)
BIVALVIA
**Mytilidae**
*Aulacomya ater* (Molina, 1782)
*Choromytilus meridionalis* (Krauss, 1848)
*Perna perna* (Linné, 1758)
*Semimytilus pseudocapensis* (Lamy, 1931)
**Limidae**
*Limaria tuberculata* (Olivi, 1792)
**Ungulinidae**
*Ungulina alba* Rang in Dunker, 1853
**Mactridae**
*Mactrotoma compressa* (Spengler, 1802)
*Scissodesma spengleri* (Linné, 1767)
**Cultellidae**
*Phaxas decipiens* (E. A. Smith, 1904)
**Tellinidae**
*Gastrana matadoa* (Gmelin, 1791)
*Leporimetis schultzei* (Thiele, 1910)
*Tellina trilatera* Gmelin, 1791
**Donacidae**
*Donax serra* Dillwyn, 1817
**Veneridae**
*Venerupis corrugata* (Gmelin, 1791)
*Venus verrucosa* Linné, 1758
**Petricolidae**
*Petricola angolensis* von Cosel, 1995

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# My Favorite Fasciolariidae

## By Zvi Orlin

From time to time I like to review one of the preferred families in my shell collection and I hope the readers of this article will care to join me in my pleasure. I have chosen for this viewing a very popular family among collectors: Fasciolariidae, a family that contains over 400 species.

The family Fasciolariidae is quite exceptional in form and easily distinguishable among shells. They are usually robust or spindle-shaped with a moderate to long anterior canal, a moderate to high spire, a smooth or plicate columella, and (often) a velvety periostracum. The sculpture is predominantly of axial ribs and spiral bands. They usually have a thick claw-shaped horny operculum and are of medium to large size, some reaching mammoth proportions (50cm or more). Most species are non-umbilicate and have a very long proboscis and a short foot. They inhabit tropical or temperate waters on sand or coral rubble, sometimes in intertidal regions. The family has a fossil record of over a hundred million years, dating from the Cretaceous Period.

Fasciolariidae is divided into 3 subfamilies:

1. Fasciolariinae are usually large in size, with shoulder knobs, a plicate columella with 1-4 folds, and a thin periostracum.
2. Fusininae are medium to large, have more distinct spiral cords and a thick periostracum, no columella plicae, and usually a long anterior canal.
3. Peristerninae are medium-sized with thick axial ribs, and thin spiral cords.

Females typically lay conical or vase-shaped egg capsules in clumps with several dozen eggs in each capsule. The eggs are usually attached to a rock or an old shell. Many of the eggs are undeveloped and serve as food (nurse eggs) for young snails developing in each capsule. The young snails will hatch by pushing out a plug in the top of the capsule. The young of most species hatch as miniature adults and simply crawl onto the substrate (known as benthic or crawl-away juveniles). Only a few species have a (usually abbreviated) planktonic larval stage.

The most interesting facet of the life of the family is its feeding behavior. They are renowned carnivores and feed on other mollusks (gastropods and bivalves), worms (polychaetes and sipunculans), barnacles, and carrion. One of the feeding methods is called shell chipping. The species using this method have a thickened sculptured lip that is used forcefully against bivalves, chipping a hole through which the proboscis is inserted. In some cases they just force the valves of clams to open, insert their proboscis and start feeding. *Fasciolaria lilium hunteria* (G. Perry, 1811), for example, may attack a wide variety of mollusks (*Nassarius* and muricid species), but prefers bivalves, particularly oysters. When this feeding behavior takes place in commercial oyster beds, the result can be surprising. The presence of *Fasciolaria lilium hunteri* in a commercial oyster bed may actually be advantageous to oyster growers, for although it consumes some oysters, it also feeds on *Urosalpinx cinerea* (Say, 1822), a well-known and particularly voracious predator of oysters. *Fasciolaria lilium hunteria* is not averse to also eating worms, an occasional barnacle, or carrion it happens upon.

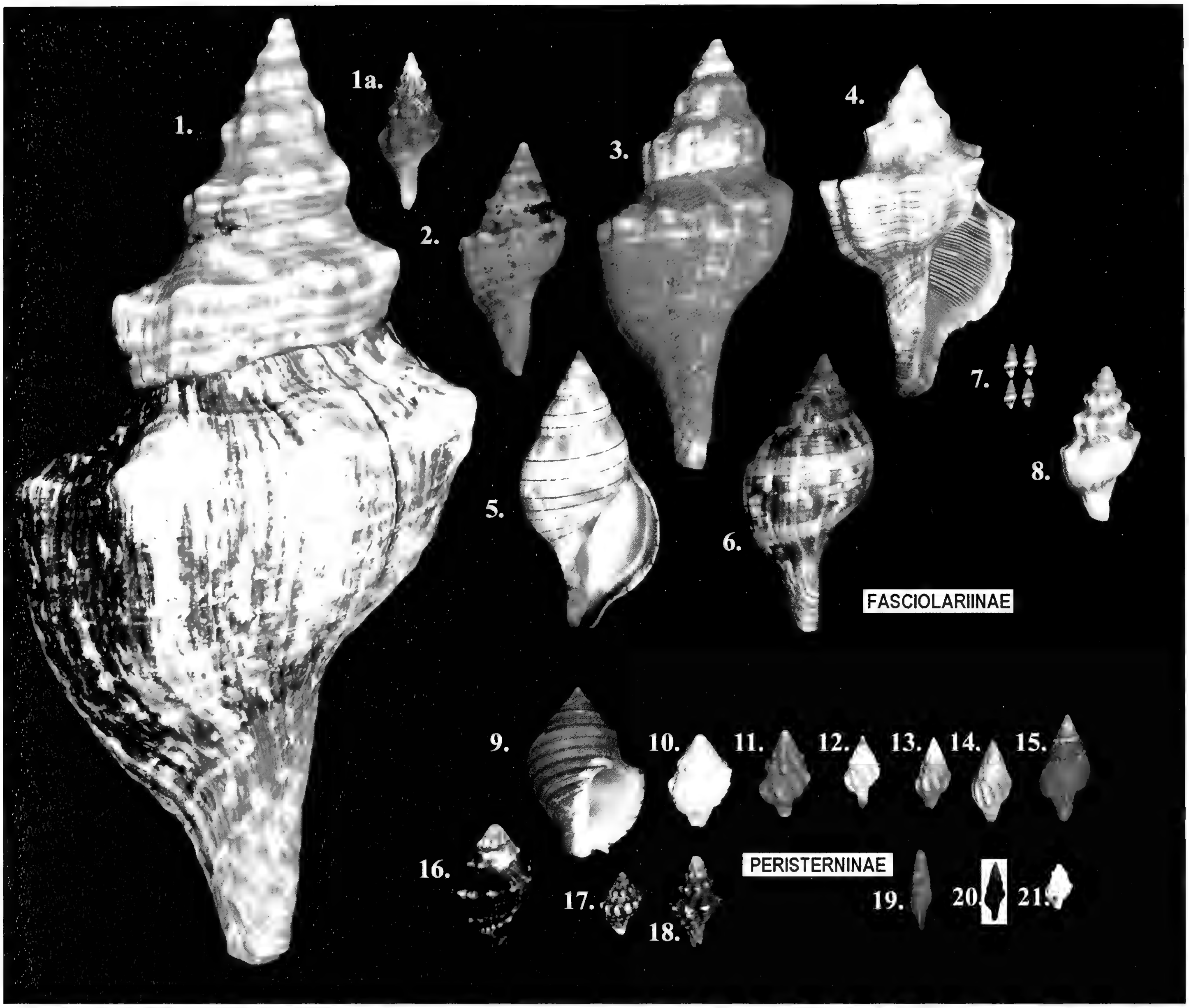
Research has shown that feeding often depends on size, with the larger species selecting smaller-sized mollusks as prey. *Triplofusus* is considered the top predator in its food web. Medium-sized species often use their foot to envelope prey or to hold the operculum ajar and prevent the prey from closing its aperture. The smaller species may rely mainly on worms in their diet but also feed on other mollusks, depending on the species available.

Ian Stupakoff (1986) conducted an interesting experiment with *Triplofusus princeps* (G.B. Sowerby I, 1825) in the Galapagos Islands. Several specimens were collected and kept in aquaria at the marine laboratory. They fed on dead crabs but failed to feed on the *Nerita scabricosta* Lamarck, 1822, offered, because of its hard and tight-fitting operculum that they couldn't dislodge. Nine other species of gastropods were offered, and all were eaten. Observations were recorded during which *Triplofusus princeps* enwrapped its prey with muscular foot contractions making the prey draw inside its shell. *Triplofusus princeps* then closed its siphonal canal and pried open the prey's operculum with its proboscis and devoured the soft parts. In one of the aquaria two adult specimens of *Triplofusus princeps* were kept but not fed for two weeks. Surprisingly, they did not attempt to cannibalize each other. Both *Fasciolaria tulipa* (Linnaeus, 1758) and *Fasciolaria lilium hunteria* are known to cannibalize, even when other sources of food are available. When *Thais melones* (Duclos, 1832) was offered to the two adult specimens of *Triplofusus princeps* after their two weeks without food, they competed for the prey and the larger and heavier specimen (125mm) succeeded in removing the prey from the smaller predator (100mm). In four separate attempts, the smaller specimen was unable to retain its prey.

Regrettably, research on feeding in Fasciolariidae is limited to a very few species. The natural history of most fasciolariids has yet to be studied and documented. Hopefully this will be rectified in the near future.

The exhibits in my collection are limited, but note should be taken of *Opeatostoma pseudodon* (Burrow, 1815), a most unusual mollusk and the only known species in the genus. The shell is equipped with a long outer lip (labral) tooth, unusual in gastropods, that is probably used in feeding on barnacles and bivalves. The labral tooth in *Opeatostoma pseudodon* is more developed than similar teeth in other species known to me. This species is found in the eastern Pacific from Baja California to Peru, and is just one of the many fascinating species in this family. I hope you enjoy this presentation of my specimens as much as I enjoyed presenting them.

ACKNOWLEDGEMENTS.
I wish to extend my sincere thanks to W.G. Lyons for reviewing the draft of my article, updating some of the identifications, and offering many suggestions for improving the text. He cannot, however, be held responsible for any errors that slipped, through which are completely mine.




FASCIOLARIINAE

1. *Triplofusus giganteus* (Kiener, 1940) 285mm, Eastern USA (listed as *Triplofusus papillosus* (G. B. Sowerby I, 1825) by some authors (e.g., Mallard & Robin, 2005))
1a. *Triplofusus giganteus* juvenile
2. *Pleuroploca australasia* (Perry, 1811) 138mm, Australia
3. *Pleuroploca trapezium* (Linnaeus, 1758) 108mm, Indo-Pacific
4. *Pleuroploca heynemanni strebeli* (Fulton, 1930) 75mm, South Africa
5. *Fasciolaria lilium hunteria* (Perry, 1811) 90mm, Florida
6. *Fasciolaria tulipa* (Linnaeus, 1758) 85mm, Bahamas
7. *Microcolus dunkeri* (Jonas, 1846) 11mm, Australia (4 specimens)
8. *Tarantinaea lignaria* (Linnaeus, 1758) 50mm, Israel - Mediterranean

PERISTERNINAE

9. *Opeatostoma pseudodon* (Burrow, 1815) 43mm, Costa Rica
10. *Peristernia nassatula* (Lamarck, 1822) 32mm, Cook Islands
11. *Peristernia pulchella* (Reeve, 1847) 30mm, South Africa
12. *Peristernia ustulata* (Reeve, 1847) 22mm, Philippines
13. *Peristernia forskalii leucothea* Melvill, 1891, 24mm, South Africa
14. *Peristernia reincarnata* Snyder, 2000, 27mm, Indo-Pacific
15. *Leucozonia leucozonalis* (Lamarck, 1822) 33mm, Caribbean
16. *Leucozonia triserialis* (Lamarck, 1822) 38mm,West Africa
17. *Leucozonia ocellata* (Gmelin, 1791) 22mm, West Indies
18. *Leucozonia cerata* (Wood, 1828) 28mm, Costa Rica
19. *Dolicholatirus bairstowi* (Sowerby III, 1886) 24mm, South Africa
20. *Teralatirus cayohuesonicus* (Sowerby II, 1878) 18mm, West Indies
21. *Taron dubius* (Hutton, 1878) 14mm, New Zealand

**References:**

**Lyons W.G.** 2006. Fasciolariidae, Book Review. *American Conchologist*, Vol.34, No.2, 26-27.

**Mallard D. and Robin A.** 2005. "Fasciolariidae." Museum du Coquillage, Les Sables d'Olonne, France, 27 pp., 70 color plates.

**Paine R.T.** 1963. Trophic Relationships of 8 Sympatric Predatory Gastropods. *Ecology*, Vol.44, No.1, 63-73. Winter.

**Stupakoff I.** 1986. Observations on the Feeding Behavior of the Gastropod *Pleuroploca princeps* (Fasciolariidae) in the Galapagos Islands. *The Nautilus*, Vol. 100, No. 3, 92-95.

**Photographs by my granddaughter Inbar Schneider.**

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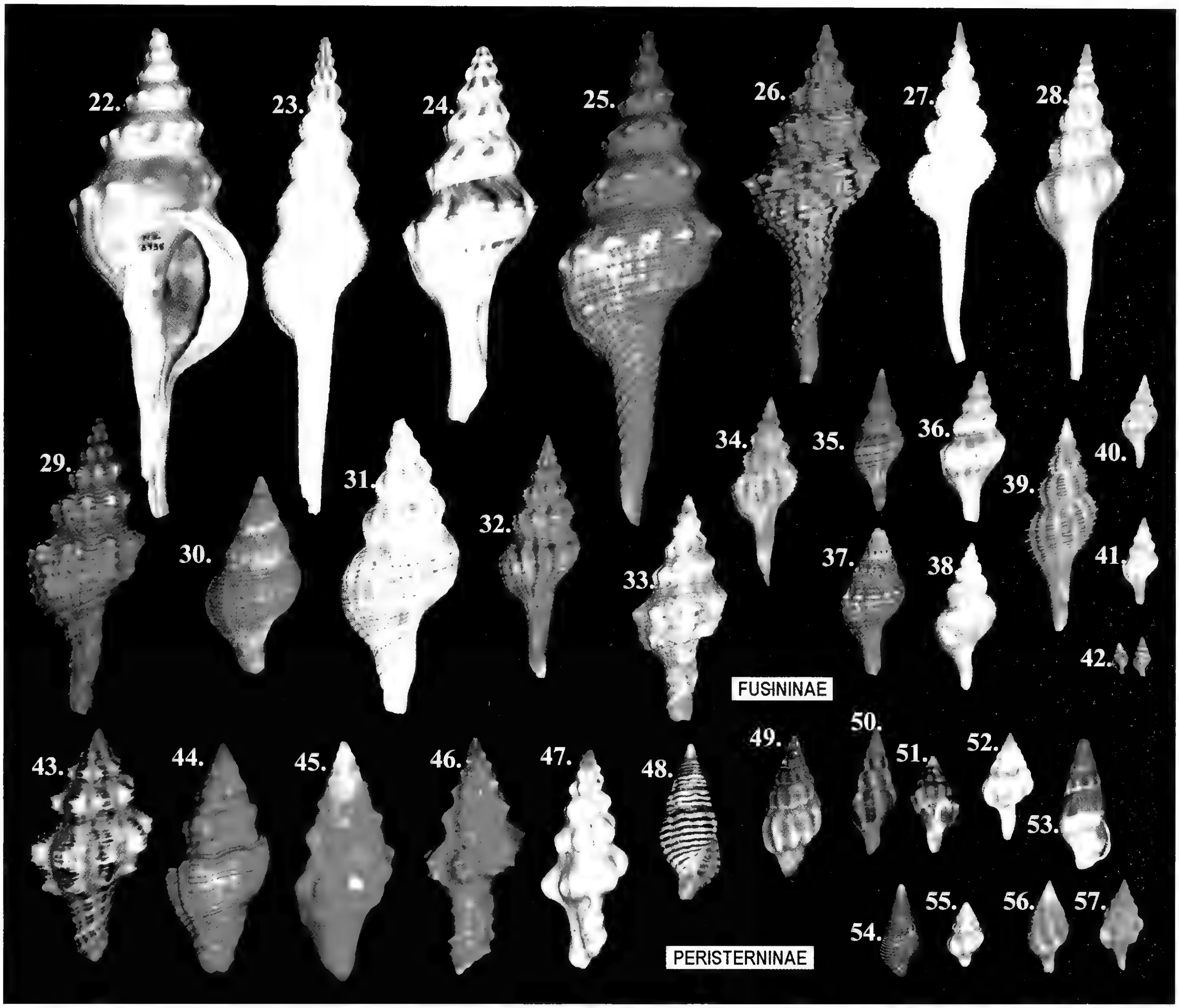



FUSININAE

22. *Fusinus genticus* (Iredale, 1936) 142mm, New Zealand
23. *Fusinus colus* (Linnaeus, 1758) 145mm, Thailand
24. *Fusinus spectrum* (Adams & Reeve, 1848) 112mm, Peru
25. *Fusinus tuberculatus* (Lamarck, 1822) 145mm, Pacific
26. *Fusinus nicobaricus* (Röding, 1798) 103mm, Indo-Pacific
27. *Fusinus forceps* (Perry, 1811) 100mm, Vietnam
28. *Fusinus crassiplicatus* Kira, 1959, 97mm, Japan
29. *Fusinus verrucosus* (Gmelin, 1791) 85mm, Red Sea
30. *Fusinus cinnamomeus* (Reeve, 1847) 65mm, South Africa
31. *Fusinus undulatus* (Gmelin, 1791) 85mm, Australia
32. *Fusinus strigatus* (Philippi, 1851) 70mm, Brazil
33. *Fusinus polygonoides* (Lamarck, 1822) 66mm, Egypt - Red Sea
34. *Fusinus brasiliensis* (Grabau, 1904) 55mm, Brazil
35. *Granulifusus rubrolineatus* (Sowerby II, 1870) 35mm, South Africa
36. *Fusinus syracusanus* (Linnaeus, 1758) 45mm, Israel - Mediterranean
37. *Fusinus ocelliferus* (Lamarck, 1816) 42mm, South Africa
38. *Glaphyrina caudata* (Quoy & Gaimard, 1833) 44mm, New Zealand
39. *Granulifusus niponicus* (E.A.Smith, 1879) 61mm, Vietnam
40. *Granulifusus consimilis* Garrard, 1966, 27mm, Australia
41. *Fusinus quandumpulchellus* Snyder, 2000, 26mm, France – Mediterranean
42. *Sinistralia maroccensis* (Gmelin, 1791) 13mm, Canary Islands (2 specimens

PERISTERNINAE

43. *Latirus polygonus* (Gmelin, 1791) 66mm, Indo-Pacific
44. *Latirus gibbulus* (Gmelin, 1791) 77mm, Indo-Pacific
45. *Latirus abnormis* (G.B.Sowerby III, 1894) 70mm, South Africa
46. *Latirus bonnieae* Smythe, 1985, 65mm, N.W. Indian Ocean
47. *Latirus robillardi* (Tapparone-Canefri, 1879) 44mm, Egypt Red Sea
48. *Latirus turritus* (Gmelin, 1791) 44mm, Egypt Red Sea
49. *Latirus angulatus* (Röding, 1798) 43mm, West Indies
50. *Latirus nagasakiensis* E.A.Smith, 1880, 35mm, Japan
51. *Latirus cariniferus* (Lamarck, 1822) 28mm, West Indies
52. *Latirus pearsoni* Snyder, 2002, 32mm, Philippines
53. *Latirus filmerae* (Sowerby III, 1900) 37mm, South Africa
54. *Latirus rousi* Sowerby III, 1886, 27mm, South Africa
55. *Latirus nassoides* (Reeve, 1847) 20mm, Indonesia
56. *Latirus craticulatus* (Linnaeus, 1758) 28mm, Indo-Pacific
57. *Latirus nanus* (Reeve, 1847) 27mm, Philippines

# Book Review: Shells

## by Philippe Bouchet and Gilles Mermet, 2008. Abbeville Press, New York. Pp. 1-168 (including numerous color plates: 31 in text, 78 full page, and 19 two-pages). 244 x 309 mm (9 1/2 by 12 1/8 in.). Hard-bound. ISBN 978-07892-0989-4. [French version published 2007 by the Muséum National d'Histoire Naturel (MNHN), Paris]. $45.00; available from many booksellers (see sidebar).

It's a miracle the coffee tables in many a conchologist's home can withstand the gravity of the lavishly-illustrated contemporary works explicitly destined to laden their weary shoulders. Despite an admitted glut of titles of this genre in my possession, I received the Bouchet and Mermet on my birthday. The mere coincidence of this delivery notwithstanding, I somehow considered it a sentinel gift and set out to give it due attention.

No time was wasted setting the tone of this work: the front jacket features a much-enlarged *Chicoreus cornucervi* (Röding, 1798) viewed in apical perspective, mysteriously illuminated from beneath, and set upon a matte pitch black background. This image joins 77 nearly as stunning, impeccably executed full-page color photographs in the book itself. Most are on a similar black background, a motif that has only recently garnished the métier. To these are added 19 two-page (verso-recto) plates and over 30 text figures. This work is, by page count alone, an iconography!

Along with the usual suspects (*Architectonica, Murex pecten, Glossus humanus*, abalone nacre, *Epitonium scalare, Nautilus*, etc.), there are some refreshing and welcome strangers to the gallery like the terrestrial prosobranch *Tortulosa tortulosa* Gray, 1847, a freshwater vermetid *Helicostoa sinensis* Lamy, 1926, a watering-pot clam, an off-beat oyster *Pustulostrea tuberculata* (Lamarck, 1804), and the extinct St. Helena endemic land pulmonate *Chilonopsis aurisvulpina* (Holten, 1802). Each of the latter is particularly well exploited in the heuristic companion plate explanation.

On page nine, Bouchet, who wrote all the text save photographer Gilles Mermet's acknowledgements, indicates that selection of photographic subject matter was made exclusively by the latter contributor during a campaign through the range of the MNHN. Aesthetic sensibilities were the only criteria applied in the process, no scientific encumbrances. That's perhaps as it should be, and maybe how most of these collaborative oeuvres usually evolve. Despite heuristic and often quite clever use of the plate explanations, a firm bond between the illustrations and text is not consistently forged.

The road-weary maxim "Don't judge a book by its cover" resonated during my review. Wending through the profusion of fine shell images is an essay, saltatory in pagination but cohesive in content. In six short chapters Bouchet leads the reader through topics like the history of science, biodiversity, extinction, procedure in nomenclature, taxonomy, scientific publication, biological rarity, all delivered with enthusiasm but without obvious effort on his (or the reader's) part. Perhaps the style is best summarized by his stated purpose [p. 23] "…an autobiographical narration about what it is like to be a malacologist and share with you a passion that has always motivated me."

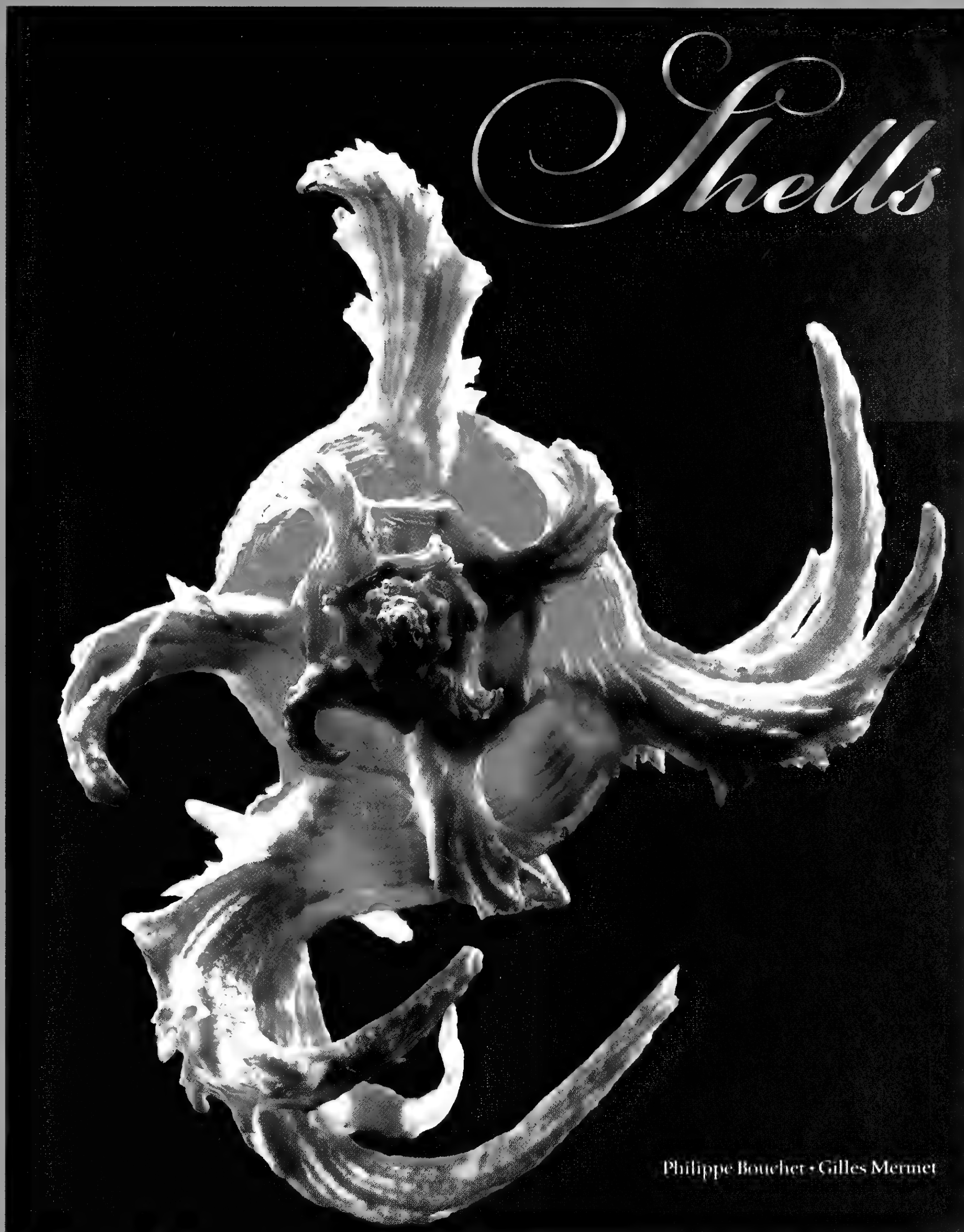
Just by way of example, in the third chapter, "Naming Shells," written mostly in the first person as are much of the others, Bouchet does a commendable job demystifying scientific taxonomy and nomenclature with a discussion including the coining of nominal taxa, synonymy, homonymy, priority, and the International Commission of Zoological Nomenclature (ICZN) among other topics. This is not hypothetical stuff; he is one of the two malacologists sitting on the ICZN (American Gary Rosenberg is the other). Would that this kind of clear thinking and writing was as easily available to me half a century ago!

Similarly in the next chapter "The Role of the Natural History Museum," he skillfully blends personal anecdote with analysis of modern history, technological advances, and a reasoned didactic to explain topics like the concept and value of name-bearing types. All this he ties into an advocacy of natural history museum as an essential component of our culture.

Bouchet deals with the paradox of shell-collecting and proper environmental stewardship [Chap. 5 "Collectors and the Environment"]. Many perspectives are offered, including the "crisis of expertise" resulting from a shortage of taxonomists, geopolitical foibles, and whole-scale environmental degradation resulting from "demographic pressure." He goes on to point out that "the collecting of shells is hardly ever the sole cause, or even the main reason for, the rarification of mollusks." He balances that judgment with the statement: "I have counted that in recent years one-third and one-half of new marine mollusk species have been described by amateurs. Amateurs and collectors have even become the main initiators of discoveries in certain regions of the world."

Although this is an English translation of a work composed in the French language, there are no significant problems so often encountered in vulnerably nuanced vocabulary and phraseology. One gremlin made it through: the image of the ovulid *Jenneria pustulata* on p. 136 is "flipped" making it sinistral. Since the companion dorsal view on the facing page is properly oriented, mutant chiral reversal seems unlikely. The taxonomy is current and excellent with one exception: *Neritina communis* (Quoy and Gaimard, 1832) appears to be a junior synonym of *N. waigiensis* (Lesson, 1831: 379). On the other hand, having been taught that Linnaeus only named mollusks in three publications (1758, 1767, 1771), I was made aware that a fourth work is involved thanks to Bouchet's attention to nomenclatorial detail. This epiphany grew from a close reading of the caption on p. 18: *Stellaria solaris* (Linnaeus, 1764 [p. 645]). The full citation to the "Museum Ulricae," as it is called, appears below.

In short, what we have here is a fine collaboration. For the price you couldn't ask for a better artistic production … and to that you can add the priceless text. The work, cohesion no matter,




is substantial, and novel, recreation for the eye and mind. Get two, and give one to someone whom you wish to derive such delights.

Harry G. Lee
shells@hglee.com

**Lesson, R. P.** 1831 ["1830"]. Voyage autour du monde, exécuté par ordre du Roi, sur la corvette de sa Majesté, La Coquille, pendant les années 1822, 1823, 1824 et 1825, sous le ministère et conformément aux instructions de S. E. M. le Marquis de Clermont-Tonnerre, Ministre de la Marine; et publié sous les auspices de son Excellence Mgr. Le Cte De Chabrol, Ministre de la Marine et des Colonies. *Histoire naturelle. Zoologie 2(1) Mollusques.* Bertrand, Paris, Paris. Pp. 239-455.

**Linnaeus, C**. 1764. *Museum S:ae R:ae M:tis Ludovicae Ulricae Regine Svecorum, Gothorum, Vandalorumque etc. In quo Animalia rariora, exotica, imprimis Insecta & Conchilia describuntur & determinantur. Prodromi instar editum.* Laurentius Salvius, Holmia (Stockholm). 1- 720 + 8 pp.

# A Bit More on *Sphaerocypraea incomparabilis* (Briano, 1993)

**by Donald Dan**

Few people can tell a story better than Peter Dance. His article, "A Shell From Mars," in the December 2007 issue of *American Conchologist* (vol. 35, no. 4) on *Chimaeria incomparabilis* (now more properly known as *Sphaerocypraea incomparabilis* (Briano, 1993)), is a good example. It was a bit of tongue-in-cheek and a bit of drama, expertly woven through a tale including some tragic human experiences. I am sure the intent of his story was to relate some of the history behind this fascinating shell. In this light, I decided to offer up my dealings with *S. incomparabilis*. None of my experiences involved tragedy, but rather played out as an story showing life can be full of contradictions and that there can be many sides to the same subject.

As a dealer who was intimately involved in the sales of four of the six known specimens, allow me to tell my personal experience. By the way, there is no such family Sphaerocypraeidae. *Sphaerocypraea* is a well-established genus in the family Ovulidae. The original erroneous placement of this shell in the family Cypraeidae was corrected in the German shell club journal, *Club Conchylia Informationen* (2000, no. 1-3, p. 55-58).

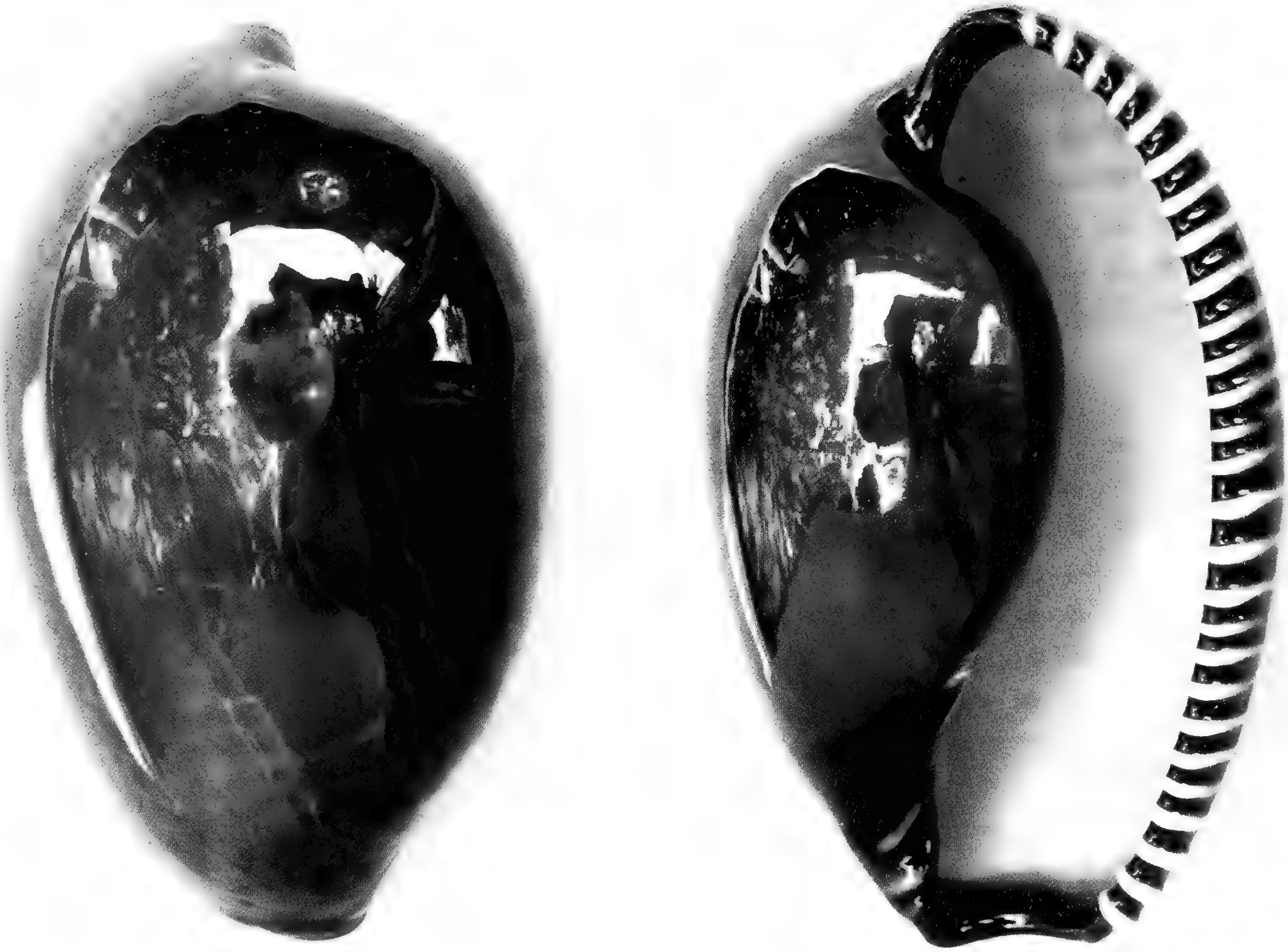
Indeed, the dealings I have had with the four specimens of this shell constituted the high point of my shelling business. They brought me only great pleasure and excitement. Finding this shell is likened to discovery of the coelacanth fish once thought to be extinct. This shell is truly a living fossil. It also brought great pleasure and good fortunes to those who relinquished their shells to me.

What started me in the pursuit of this shell was a small hint through the shell collector's grapevine that a type of shell existed among various Russian collections that could not be clearly defined as a *Cypraea*, *Ovula*, *Marginella*, or even a strange mix of these. I was told it was a gorgeous shell jealously exchanged among Russian collectors, passing from one collection to the next. It was seemingly a very valuable exchange commodity. That rumor greatly excited my curiosity. The shell became the focus on my very first visit to Moscow in 1991. It was also the start of my very close friendship with Zaour Edzoev, a Russian dealer who speaks English and served as my guide. Without Edzoev I would not have been able to navigate around Moscow. Life in Russia at that time was miserable. Food was in extremely short supply and it was bitterly cold and dreary. My first reaction was how in the world can people live so poorly in one of largest countries in the world, a country rich in natural resources. Edzoev made it all quite tolerable and in fact I found my first visit to be quite pleasant.

The revelation (finding this shell was more than just finding a new mollusk species) finally came when I visited Yuri Sluvis and saw the shell in his collection. My first reaction was that this was unbelievable! I was correctly armed with attractive exchange materials as advised by Edzoev. Sluvis was an avid shell collector and didn't mind exchanging one shell for many shells, especially as the trade shells I brought with me included numerous rare shells. Through protracted negotiation, I finally acquired my first specimen from Sluvis in exchange for 20 shells. I don't know who was happier. He was ecstatic. I was beside myself for having acquired this fascinating specimen. That particular shell had apparently been passed on through a number of Russian collectors, the latest of whom was Sluvis. Up to this time the Iron Curtain had hidden it from the western world.

In Moscow at that time was a second specimen in the collection of Mikhail Vinogradov, an avid shell collector and, at one time, the Deputy Director of the Institute of Oceanology (also known as P.P. Shirshov, a world renown oceanographic research institute well known for its Mir submersibles). He was high up in the communist hierarchy. When I first visited him in 1991, he did not want to part with his specimen, so I took some pictures of his shell to bring back home. We nevertheless began a close friendship, in spite of the ideological chasm (he was a dyed-in-wool communist

**_Sphaerocypraea incomparabilis_, 73.8mm x 42.2mm. This shell was trawled in 1963 by the Soviet fishing trawler "Alushta' at 100 meters depth in the Gulf of Aden. The Soviet fisherman Murballa Kurbanov originally owned the shell. The break on the dorsum allowed a look inside the shell, confirming its placement in the family Ovulidae.**



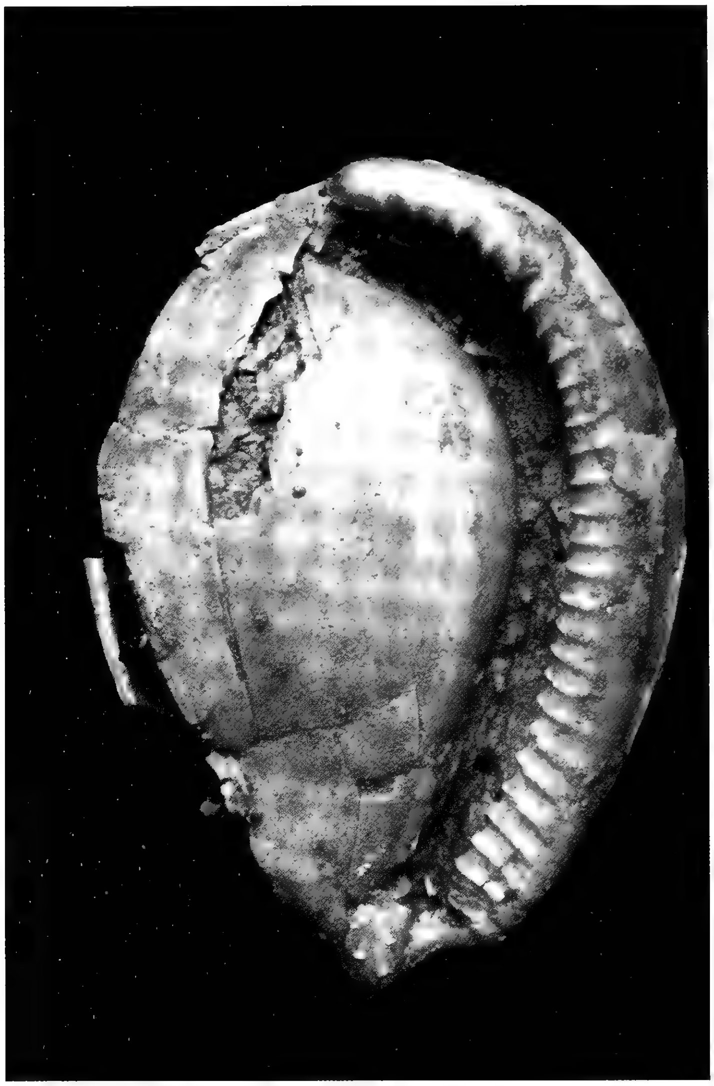
***Sphaerocypraea incomparabilis*** **(Briano, 1993), 66.3mm x 42.1mm. This is the shell that was later stolen from the American Museum of Natural History, New York, and then recovered and used as evidence for the prosecution. Note the 27 labial teeth and the truncated 13th tooth (counting from the top of the image).* The green color and mottled appearance on the left side of the shell are reflections of a lawn and trees resulting from photographing this very shiny and reflective shell outdoors.**

and greatly despised western influences). Due to the subsequent Soviet economic meltdown, Vinogradov needed financial help and later decided to sell his shell. It was like selling a family heirloom, but the proceeds sustained him and his family financially through a very difficult period. His shell saved him financially, and of course, it was a great delight for me to add this to my rare shell inventory. This was my second happy occasion with this species.

I disclosed the possession of my two specimens to only a few specialists in that field (Cypraeidae and Ovulidae), while some serious research took place. Among those I informed of my finds were Luc Dolin (France) and Gary Rosenberg (USA). The former is a specialist in fossil ovulids and the latter a specialist in recent ovulids. Dolin instantly connected this shell to the genus *Sphaerocypraea*, until then an extinct genus in the Family Ovulidae. He was absolutely astonished when I first showed the shell to him at the National Museum of Natural History in Paris. He was finally able to see a live shell in living color. Until then, all he had seen were rough looking gray fossil cousins. "It is truly a living fossil," he said.

These two specimens were eventually purchased by Didi Fleischner at deep discount. The deep discount transaction was predicated on both specimens being donated to the American Museum of Natural History in New York. Walter Sage, at that time working for the museum, was the matchmaker of this deal. I feel very proud of having done my part to make the donation possible. One of the two was the subject of a museum theft described in part by Peter Dance (see the side-bar comments).

A retired fisherman living in Crimea had the third known shell in the former Soviet Union. He acquired his specimen in 1963 while working on the fishing trawler "Alushta" in the Gulf of Aden. The trawl was set at a depth of 100 meters. The shell fell out of the trawl net and broke the dorsum when it hit the metal deck. The shell therefore has a large hole that provided a detailed interior look. That fortuitous damage enabled us to determine that this species was an ovulid, not a cypraeid. This shell is the only known specimen that carried reliable locality data and had not changed hands since it was collected. I acquired this shell through the financial help of Mrs. Robert Cranmer, an avid shell collector,

**Left:** ***Sphaerocypraea alata*** **(Edwards), a fossil from the Lower Eocene.**
**Right:** ***Sphaerocypraea bowerbankii*** **(Sowerby, 1850), a fossil from the Middle Eocene.**

with the specific instruction that it would be donated to the Smithsonian National Museum of Natural History. My very good friend Igor Bondarev in Crimea was the middleman. Many years later I acquired a fourth specimen. I kept detailed records of all four shells and a complete set of photographs.

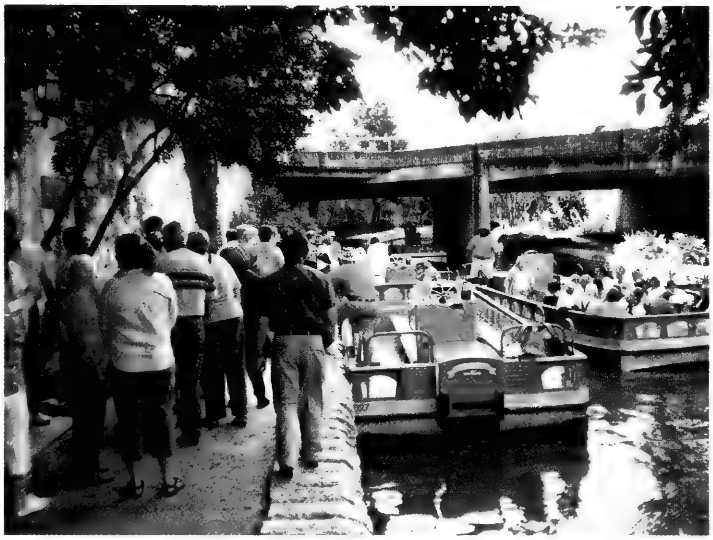
Like everyone, my life has gone through trials and tribulations, but there have also been many good times. Yes, hurricanes wrecked my yard twice in three years. I lost my favorite 30-year-old mango tree and a very productive grapefruit tree, but should those events be attributed to a particular shell, or any one of many shells that I handled at the time? I was stranded on the road to shell shows due to transmission failure twice. Should I attribute that to any of the shells in my inventory? I'll let you decide. Shells are my passion and a large part of my life. I don't see what could be devilish or bad luck in any of them. I am and always have been a "glass half full" type of person; I truly believe my involvement with *Sphaerocypraea incomparabilis* was lucky and of benefit to both myself and the world of conchology.

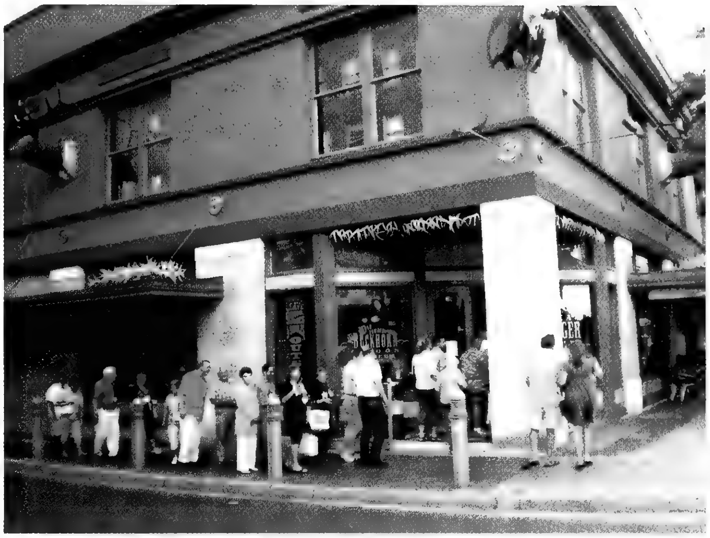
**Donald Dan**
6704 Overlook Drive
Fort Myers, FL 33919, USA
Tel. (239) 481-6704

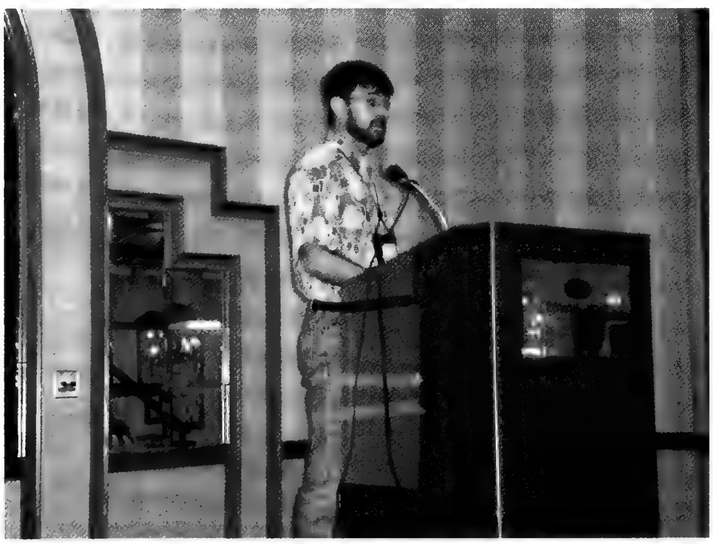
*Because the shell stolen from the American Museum of Natural History in New York was one of those acquired by Donald Dan, he had a complete record of the shell including size measurements and photographs. The investigator in the case flew Donald from Baltimore to Miami to provide both expert testimony and the shell records. What basically nailed the case were the exact measurements of the shell (length and width), and the notation and image of a truncated 13th tooth. These were unique features that exactly matched the stolen shell. Having this evidence, the Assistant District Attorney confidently prosecuted the case in Miami.

# Conchologists of America 2008 Convention
# San Antonio, Texas

### Photographs by Lucy Clampit







**Clockwise from top left:**

**1. Loading the water taxis for a trip to the Buckhorn for our welcome party. The taxis could be boarded right outside the hotel and provided comfortable and leisurely service to the many shops and restaurants located along the San Antonio River.**

**2. The outside of the Buckhorn with a line of COA members entering. The "icicles" hanging overhead are actually deer antlers.**

**3. Inside the Buckhorn, a large building holding several museums on three floors. They also served a mean dinner.**

**4. Fabio Moretzsohn presents one of what proved to be many interesting programs.**

**5. A buffet table decked out in southwestern colors, set up and ready to serve hungry conventioneers.**

Co-chairs Wanda Coker and Jean Dickman check convention details. They had lots of dedicated, hard-working Texan help.

Wayne and Patty Humbird welcomed attendees and made sure all got their packets and correct field trip information.

Harry Lee, Emily Vokes, and Hank Chaney enjoy a quite moment before the banquet.

Newly elected COA President Alice Monroe in one of her more serious moods.

COA Shell Show winners (L-R): Janie Nill, Rusti Stover, Patty Humbird, and Bobbi Cordy display their winning plaques.

Emilio García (left) and Donald Dan (right), both contributing authors in this issue, discuss the finer points of malacology.

# Next Year, Come to the Beach for COA 2009!

Suncoast Conchologists, the shell club of Clearwater, Florida, and innovators of the popular Shellers' Jamborees, will host the 2009 Conchologists of America Convention, July 19–23 on Clearwater Beach! Yes, Clearwater Beach, one of the top tourist destinations in Florida!

In the past, a number of COA members have suggested holding the convention aboard a cruise ship. Still others have voiced returning the convention to a beach location. So we came up with the idea of combining the two, *Cruising the Suncoast*, a cruise aboard the imaginary *Silver Alatus* in celebration of Suncoast Conchologists' 25th Anniversary…at the beach!

You will "board" at our home port host hotel the Hilton Clearwater Beach Resort, located on Florida's west coast (20 miles from Tampa International Airport) on 10 acres of white sandy beach on the Gulf of Mexico. You can get there via the SuperShuttle. The Hilton is within easy walking distance of a variety of restaurants, shops, the new Beach Walk, and entertainment, including Pier 60 where nightly Sunset Celebrations are held.


The Hilton has 416 staterooms with 10,000 feet of ballroom space for the dealers' bourse. Our special convention rate is $159.00 + 12% tax for up to 4 people per room with a king or two double beds. Reservations can be made now through June 22, 2009 at this special rate, which will be honored 3 days prior to and 3 days after the convention. For online reservations use the Hilton web site: www.clearwaterbeachresort.com and enter the Group Convention ID Code: **SHELGS.** By phone in the USA, call 1-727-461-3222 or 1-800-753-3954. Overseas: call 1-727-461-3222. You **MUST** mention Conchologists of America to get this rate! Parking is complimentary for guests staying at the Hilton.

Staterooms include: high-speed internet access, in-room safe, mini-refrigerator, coffee maker, 27" premium cable TV, desk area, hair dryer, iron and ironing board, and weekday delivery of *USA Today.* Other amenities include: ATM, exercise room, coin laundry or laundry/valet service, gift shop and newsstand, pool towels and business center.

There will be a choice of pre-convention field trips on Saturday morning, July 18th: diving in the Gulf of Mexico, a tour of the Florida Aquarium, fossil collecting from the Pliocene and Pleistocene eras, a trip to Weeki Wachee Springs — "City of Mermaids" or a visit to historic Tarpon Springs for lunch, shopping, and a boat trip down the Anclote River to Anclote Key. On Tuesday afternoon there will be a dolphin sighting trip and, in the evening, a dinner cruise or a wading/shelling trip to take advantage of the minus 0.5ft low tide in Tampa Bay! We will have more information about all of these trips in the December issue.

Our convention aboard the *Silver Alatus* will feature the Suncoast Silver Spectacular, a dazzling display of silver collectibles and five other sea-related categories. There will be more about this in the next issue, too!

Of course, we will have all of the things you'd expect at a COA convention: a variety of interesting and informative programs, both silent and verbal auctions, the raffle and dealers' bourse, plus our Bon Voyage Sail Away Party and of course the Captain's Farewell Banquet. Expect a few other surprises, too!

To help make COA 2009 a success, we are gladly accepting your auction donations! They can be mailed to Katherine Smith, 3227 MacGregor Drive, Palm Harbor, FL 34684-2347 USA.

Your cruise co-captains are Carolyn Petrikin, 1-727-796-4117 and Alice Monroe 1-727-796-5115, or you can e-mail us at: COA2009@aol.com.

Start making your plans **NOW.** Come "shellabrate" Suncoast Conchologists' Silver Anniversary in July 2009 by *Cruising the Suncoast* aboard the *Silver Alatus* and enjoy one of the best COA conventions you will ever attend, at the beach!

# An Unusual Find

## By Bobbi Cordy

As most of you know I am NOT the scientist in the family. My husband Jim is the serious collector and scientist; and he spends hours studying, cleaning, and exhibiting his shells. I am very proud of what he does.

I have found my niche in the family with my artistic abilities, computer layouts, and putting together trips and snorkeling. We run trips to the Bahamas every summer. We especially enjoy the island of Eleuthera in the Bahamas. The trip to this wonderful island is actually sponsored by the Astronaut Trail Shell Club. We have shelled this area now for 15 years, always with great results.

During the 15 years we have shelled Eleuthera we have done a lot of exploring to find the best collecting areas. We do not shell North Eleuthera. There are too many tourists and divers. We like the unexplored areas where very few people go. Most of the beach areas are not marked and getting to them can be difficult. We probably have been down most of the small unmarked roads in central and southern Eleuthera.

**Above: view from Miss Ethyl's of Tarpum Bay in Eleuthera, Bahamas. We have found many wonderful shells in this bay.**

**Below: Miss Ethyl, our kind and gracious host.**

While in Eleuthera we stay at Miss Ethyl's at Tarpum Bay. It is reasonably priced and centrally located. Even the area in front of the cottages on Tarpum Bay has yielded great shells, including lace murex and *Xenophora*. We especially enjoy taking new shellers on these trips and watching them find nice shells. Helping to educate and mentor first-time shellers makes the trip that much more rewarding. This is probably the cheapest 8-day trip to the Bahamas you can possibly find, even though the price has doubled over the years as airfare and other costs go up.

In Eleuthera we snorkel a different habitat and beach every day. The beach areas where we collect are typically so isolated that we have the area to ourselves except for an occasional fisherman. Jim always informs everyone the night before what to expect to find and where. He can identify just about anything you find. The front porch at Miss Ethyl's is the gathering place every evening as everyone brings out his or her finds for the day. Usually the first question is, "What is this?" followed by, "How do I clean it?" We often hang the helmets out back until the animal falls out. Most of the shells are put in the freezer as we empty the freezer of our week's food.

Amazingly, on almost every shelling trip we seem to find something special. In May 2008 we were snorkeling an area we call "Xeno Beach." It really does not have a name. The name "Xeno Beach" came about because on more than one occasion we found hundreds of dead *Xenophora* (*Xenophora conchyliophora* (Born, 1780)) washed up on the beach. This is an excellent place to turn over rocks in shallow water and during our latest trip I proceeded to do just that.

When I came back in from snorkeling, I showed Jim what I had in my collecting bag. Among the many shells I had collected

**My sinistral or left-handed *Morum oniscus* (Linnaeus, 1767) (left) and a normal dextral or right-handed specimen (right). Unlike most *Morum* species that are typically rare and deep water dwellers, *M. oniscus* is a fairly common species found from southern Florida to Brazil. The *Morum* were once classified in the family Cassididae, but evidence of a detachable rear portion of the animal's foot (called autotomy) as well as other anatomical similarities led to the inclusion of this group in Harpidae.**

**This is a living *Morum oniscus* photographed by Peggy Williams. You can see more of Peggy's live mollusk photographs at www.shelltrips.com.**

was a dead-collected *Morum* that I had decided would be used as a craft shell. I pulled the shell out of my bag to show Jim and he immediately realized the shell was left-handed. The shell was a *Morum oniscus* (Linnaeus, 1767).

When I returned home, I sent a photo of my new find to Dr. Harry G. Lee. He has a long-standing interest in sinistral or left-handed shells and told me he had never seen a left-handed harpid. My craft shell was starting to look like a very exciting find.

I entered the shell as a "Self Collected World-Wide" specimen in the mini shell show at the 2008 Conchologists of America Convention in San Antonio. I knew at the time the judges had to be well aware of this species. Judges Richard Goldberg and Dr. Emilio Garcia also apparently liked my unusual find as it took first place.

Although I really did not need a reason to return to this marvelous area, I will continue to look for unusual finds while enjoying that wonderfully warm and crystal clear Caribbean water.

Bobbi Cordy
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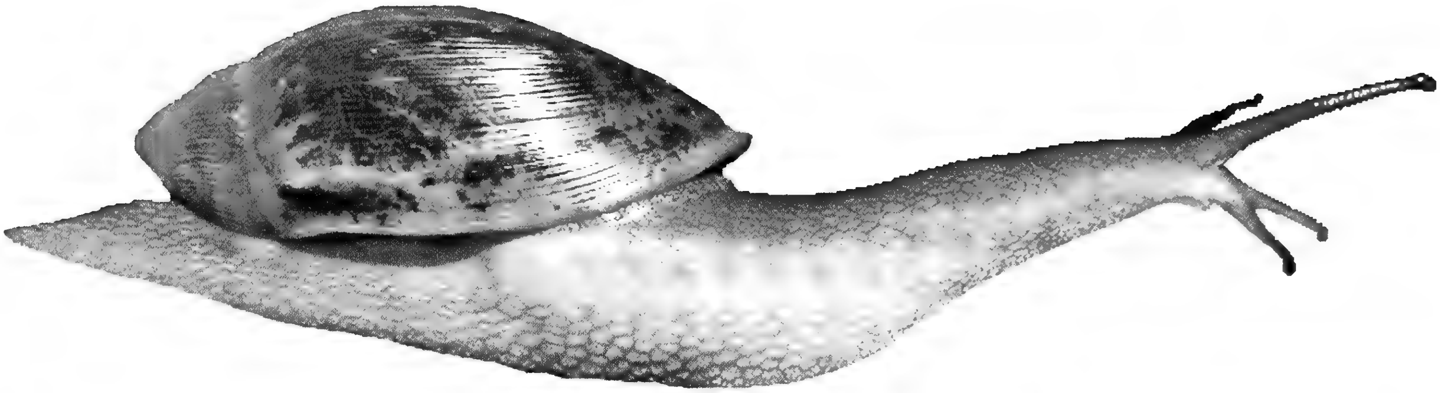
# The Rosy Wolfsnail

by Bill Frank (photographs by author)



Here in northeast Florida there is quite likely a sex-charged killer lurking outside the door. This fearsome beast is none other than the rosy wolfsnail, *Euglandina rosea* (Férussac, 1821). *Euglandina rosea* is the largest terrestrial snail found in northeast Florida and is the only of our recorded 70 native species that feeds on other snails. The natural range of this species includes most of the southeastern United States where it can grow to a length of over 60mm. Henry Augustus Pilsbry recorded a 76mm specimen from Palatka, Florida (Pilsbry, 1946), but normally the specimens found locally are much smaller (40-50mm range). Long recognized by man for its prowess in hunting down and killing other snails, *Euglandina rosea* has been intentionally introduced to a variety of islands in the Pacific and Indian Oceans, as well as Bermuda, and the Bahamas, ostensibly to control undesirable snail species such as the giant African snail [*Achatina fulica* (Bowdich, 1822)]. To put it succinctly, these introductions have not worked out as originally envisioned. The *Euglandina* have been blamed for the extinction of endemic species and have been heavily implicated in the extinction, or at least decline, of other species of snails wherever they have been introduced, notably in Hawaii and French Polynesia.

Considering all the tales of woe associated with this species, one might be inclined to believe that the lawns and forests of northeast Florida are literally over-run with *Euglandina*. Based upon my experience that is certainly not the case. In fourteen years of "snailing" my extensive yard as well as those of my neighbors and other adjacent environs, less than two-dozen living specimens have been found. Whether this low number is a result of the snail being somewhat rare or because they keep a low profile is not entirely clear at this point.

My latest foray into the world of the rosy wolfsnail began during a balmy evening this past March on my front patio when in the darkness I kicked "something" crawling across the outdoor carpet. Fortunately this "something" turned out to be an adult *Euglanding rosea* and not a "something" that bites. From past experience I knew when one finds a single *Euglandina* on the prowl there are likely others nearby. This was borne out soon enough when two additional specimens were quickly located in other parts of the yard. The threesome was transferred to a covered bucket for storage while a five-gallon terrarium was prepared for more permanent observations.

**Above: *Euglandina rosea* laying eggs. This adult snail has a shell that is about 55mm long. Photographed on side of lawn, 4 Oct 2004.**

**Below: Hatching *Euglandina rosea* found under dead palmetto leaf, Ft. Caroline National Memorial, Jacksonville, Florida, 8 Oct 2007. The larger shell is about 8mm.**

Far from being stressed by their temporary new home, the *Euglandina* immediately seized on the opportunity of like companionship by immediately mating. This is an observation I've made in the past when I was fortunate enough to have collected a pair at the same time. The actual mating is usually preceded by some tentacle waving and caressing, a mating ritual of sorts.

Through diligent searching over the following week, two additional *Euglandina* were found and added to the terrarium. With each new terrarium introduction, the established residents mated with the newcomers. While most mating events involved two snails, threesomes were also observed. Keeping the five fed has proven to be a daunting task, especially with the year's dry weather.

My success in finding the *Euglandina* is more than likely due in part to the fact that my immediate neighborhood is over-run with the alien Asian tramp snail, *Bradybaena similaris* (Férussac, 1821), a medium-sized (up to about 12mm) species. This species has proven to be the *Euglandina*'s preferred prey. Despite the fact that Assistant Editor Harry Lee has dissected the guts of *Euglandina* and found the remains of our local small meadow slug, *Deroceras laeve* (Müller, 1774), and other small snails, my fearsome five have ignored the meadow slugs and smaller snail species they were offered, preferring instead the *Bradybaena*.

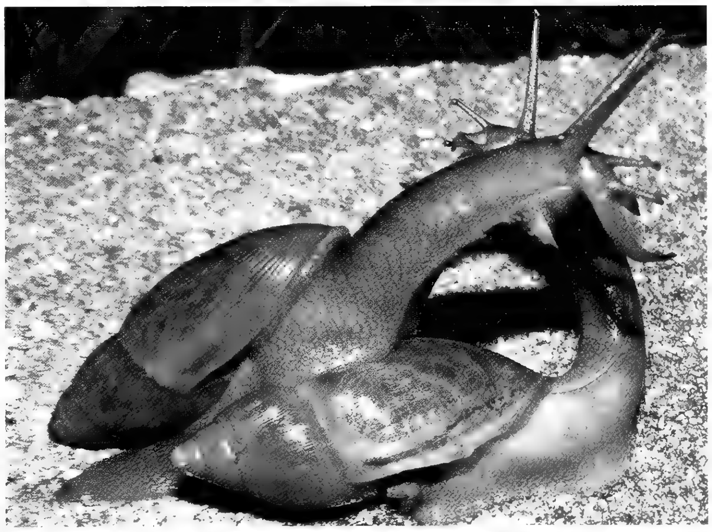
Observing *Euglandina* on the prowl for food is a study in efficiency. Their ability to quickly find the prey combined with their speed (yes some snails are rather quick) makes the whole event rather brief and showcases all the traits which led to their ill-advised world-wide introductions. In the case of the Asian tramp snails, the prey are reduced to an empty, well-cleaned shell in minutes. No matter how many live specimens were introduced into the terrarium prior to my retiring for the night; only empty shells remained the next morning.

Considering that the group spends an inordinate amount of time tending to the business of reproduction (as well as feeding), I'm hoping that, in the future, eggs and baby *Euglandina* may be on the agenda. Only time will tell.

Jacksonville Club member Carol Ruckdeschel of Cumberland Island, Georgia, reports that *Euglandina* are quite common on the island. She has found their eggs, with calcareous shells, that she initially mistook for lizard eggs.

Bill Frank
strombus@bellsouth.net

**Pilsbry, Henry Augustus.** 1946. Land Mollusca of North America (North of Mexico), 1939-1948, Monograph 3, Academy of Natural Science Philadelphia, vol 1-2.



**Top right:** ***E. rosea*** **feeding on** ***Bradybaena similaris*****, the Asian tramp snail. The** ***E. rosea*** **will leave just an empty shell.**

**Middle:** ***E. rosea*** **mating activity. The first few minutes consist mostly of tentacle waiving and posturing.**

**Bottom:** ***E. rosea*** **mating activity. After 15 minutes or so the actual mating takes place.**

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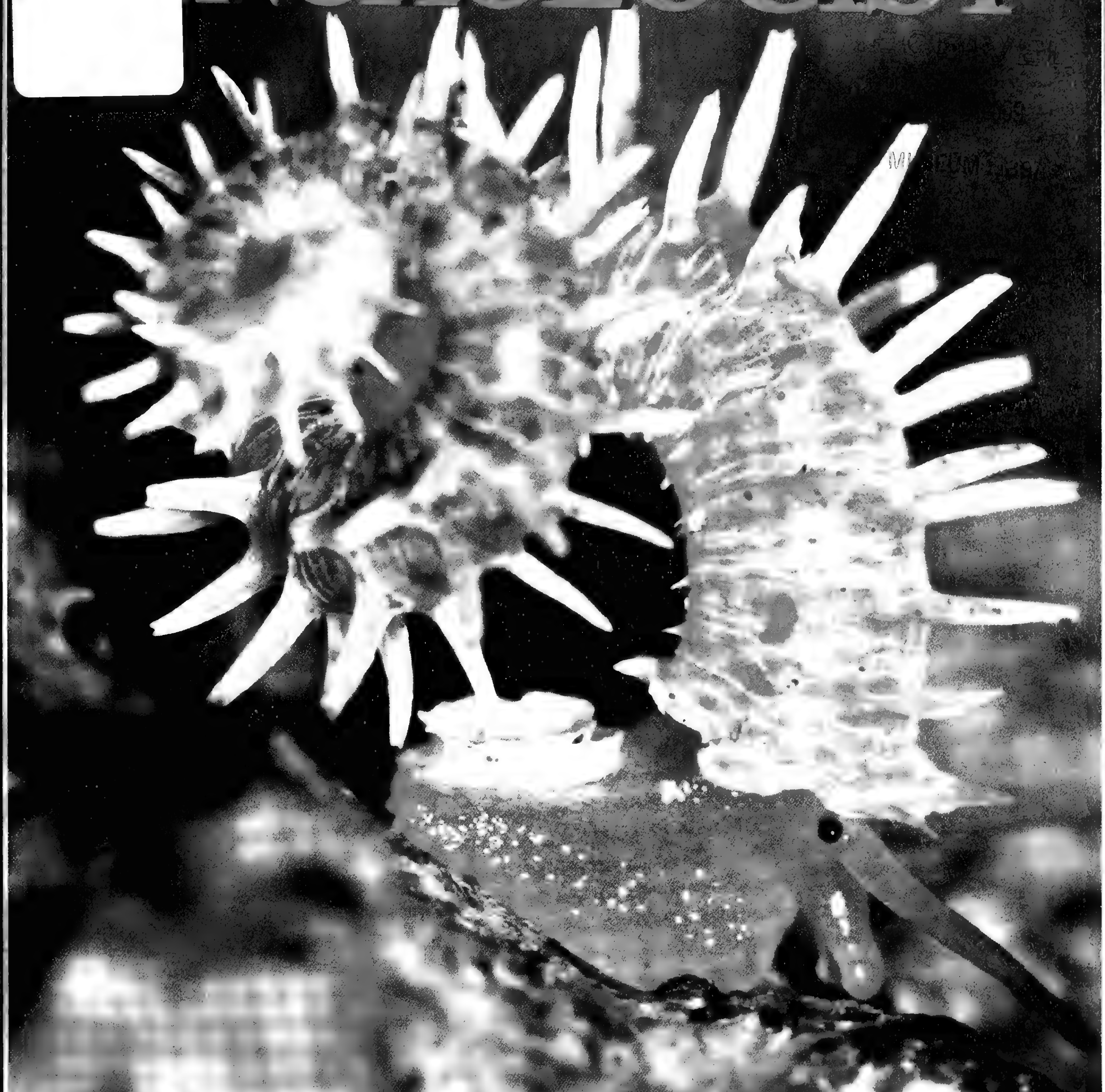
# American CONCHOLOGIST



Quarterly Journal of the Conchologists of America, Inc.

# CONCHOLOGISTS OF AMERICA, INC.

**Volume 36, No. 4 December 2008**


In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***

**OFFICERS**

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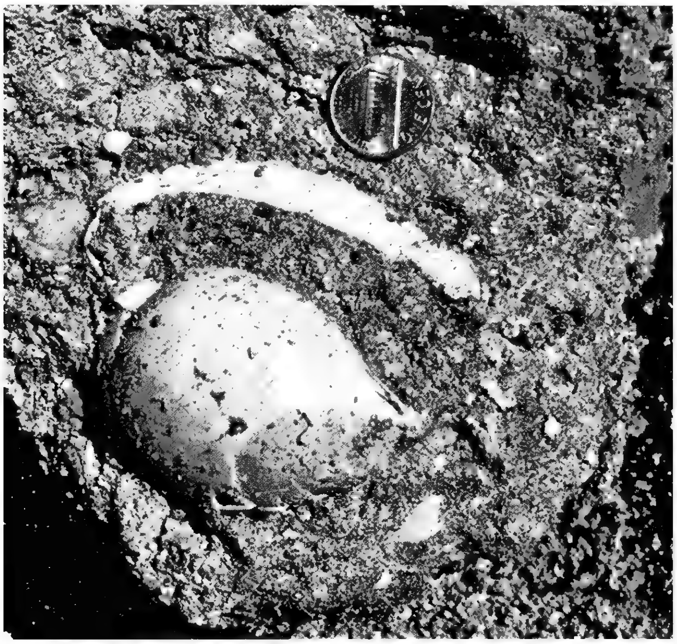
**Front cover: The Cuban endemic annulariid *Blaesospira echinus infernalis* Torre & Bartsch, 1941, 9mm. The intricate sculpture of this shell is not visible without magnification, but once seen larger than life, it is hard to forget. This specimen was photographed on a rock in the Sierra de la Penitencia, Pinar del Río, Cuba. See more images from this area in the article by Simon Aiken on page 24.**

**Back cover: This is again the Cuban endemic annulariid *Blaesospira echinus infernalis* Torre & Bartsch, 1941, 9mm. This time, however, it is a cleaned shell. This specimen is as close to gem as this shell gets and in much better condition than the specimens rather rarely offered for sale. Both the front cover and the back cover images are courtesy of Simon Aiken of the United Kingdom.**

**Editor's Comments and such:**

We received a nice note from COA member David Dockery concerning the articles by Peter Dance (Dec 2007, vol. 35, no. 4) and Donald Dan (Sept 2008, vol. 36, no. 3) on *Sphaerocypraea incomparabilis* (Briano, 1993). David wrote that he enjoyed the articles and wanted to add a bit more about this "living fossil." He stated that, "Luc Dolin, who first recognized the connection of this species with *Sphaerocypraea*, collected this genus in Eocene strata in Mississippi as well as Eocene strata of France and England. Attached is a picture of *Sphaerocypraea jacksonensis* excavated by Luc from the Late Eocene, Moodys Branch Formation, at Town Creek, in Jackson, Mississippi. The picture was taken in September of 1981."

David Dockery
PO Box 1304
Clinton, MS 39060-1304



There is also a needed correction to the Zvi Orlin article on Fasciolariidae (Sept 2008, vol. 36, no. 3, p. 17-19). It seems some errors (identification mix ups) slipped into plate 1, specifically figures 2, 3, & 4. The plate caption should read:

2. *Pleuroploca heynemanni strebeli* (Fulton, 1930)
3. *Pleuroploca australasia* (Perry, 1811)
4. *Pleuroploca trapezium* (Linnaeus, 1758)

Zvi says these corrected identifications are easily borne out by the relative sizes of the illustrated specimens, as these reflect the proper identifications.

*Tom Eichhorst*

# Molluscan findings from a recent dredging expedition off the Louisiana coast

**Emilio Fabián García**

In a recent seven-day dredging expedition off the Louisiana coast, a number of interesting mollusks were collected. The cruise, sponsored by Mr. Bill Cargile, of Woodside, California, covered roughly from 28°37'N to 27°48.5'N, and from 89°32.7'W to 93°03'W, and from a depth of 45m to 950m. We used the R/V *Pelican*, a research vessel about which I have written on several previous occasions (see below).

To make this report more meaningful, I will divide our findings into three ecological areas: 1) species found on pinnacles, roughly between 45 and 108m, 2) species found in mud in around 100m, 3) species found in mud in over 400m. The report will only include some of the more interesting species, as others have been reported elsewhere (see García, 1999, 2000, 2002, 2007; and García & Lee, 2002, 2003).

### 1 - Species dredged on pinnacles

Species collected in these areas inhabit a bottom composed of calcareous rubble and (normally) coarse sediment. In our earlier cruises a good number of the dredge hauls with rubble also had sediment from which many interesting micro-mollusks were extracted. I always brought along sacks in which to bring the sediment home for sorting, providing me with countless hours of pleasure after the cruise. This trip, however, was a disappointment in that respect. Colleagues from earlier expeditions agreed that it was very peculiar that most hauls came up almost clean of sediment. Did Katrina and Rita have anything to do with it?

There were 73 dredge hauls made on pinnacles; of these approximately 20% came up empty or without mollusks. Some of the species collected:

*Cyathodonta rugosa* (Lamarck, 1818) (+ *semirugosa* (Reeve, 1859)) - Abbott (1974:559) labels this species as "not uncommon," and inhabiting "shallow water on mud bottom." The single valve collected on this trip is only one of four that have been collected in the *Pelican* cruises. In the Gulf of Mexico this species has only been reported from Texas; however, besides the Louisiana record, I have collected it off SW Florida (EFG 25427) and in Bahía de Campeche (EFG 25925), in 38.4 to 63.8m, in rubble.

*Lithopoma tectum* (Lightfoot, 1786) (Fig. 4) - It seems that this common species has never been reported from the northern Gulf of Mexico. I have three earlier records of it from Louisiana, but for some reason I failed to report them before. It has been dredged in rubble at 58-79m.

*Caecum floridanum* Stimpson, 1851 (Fig. 5) - A single, rather worn specimen of this species was dredged in 64-66m. It was collected by Charlotte Thorpe, of Jacksonville, Florida, and later identified by Dr. Harry G. Lee. It is our first record for this species in Louisiana from the *Pelican* expeditions.

*Tonna pennata* Mørch, 1852 (Fig. 8) - Although it is not an uncommon species in the Caribbean, it is rare in the northern Gulf of Mexico. This is apparently the first record of this species from Louisiana.

*Cymatium rehderi* A. H. Verrill, 1950 (Figs. 10) - This rather rare species is a good example of how little we know of the real distribution of many mollusks. Before 2005 *C. rehderi* had not been reported from the Gulf of Mexico. Since then it has been recorded from west Florida (García, 2005) and Bahía de Campeche (García, 2007a). During this expedition Charlotte Thorpe collected and photographed the live specimen shown here; it was identified by Dr. Harry Lee.

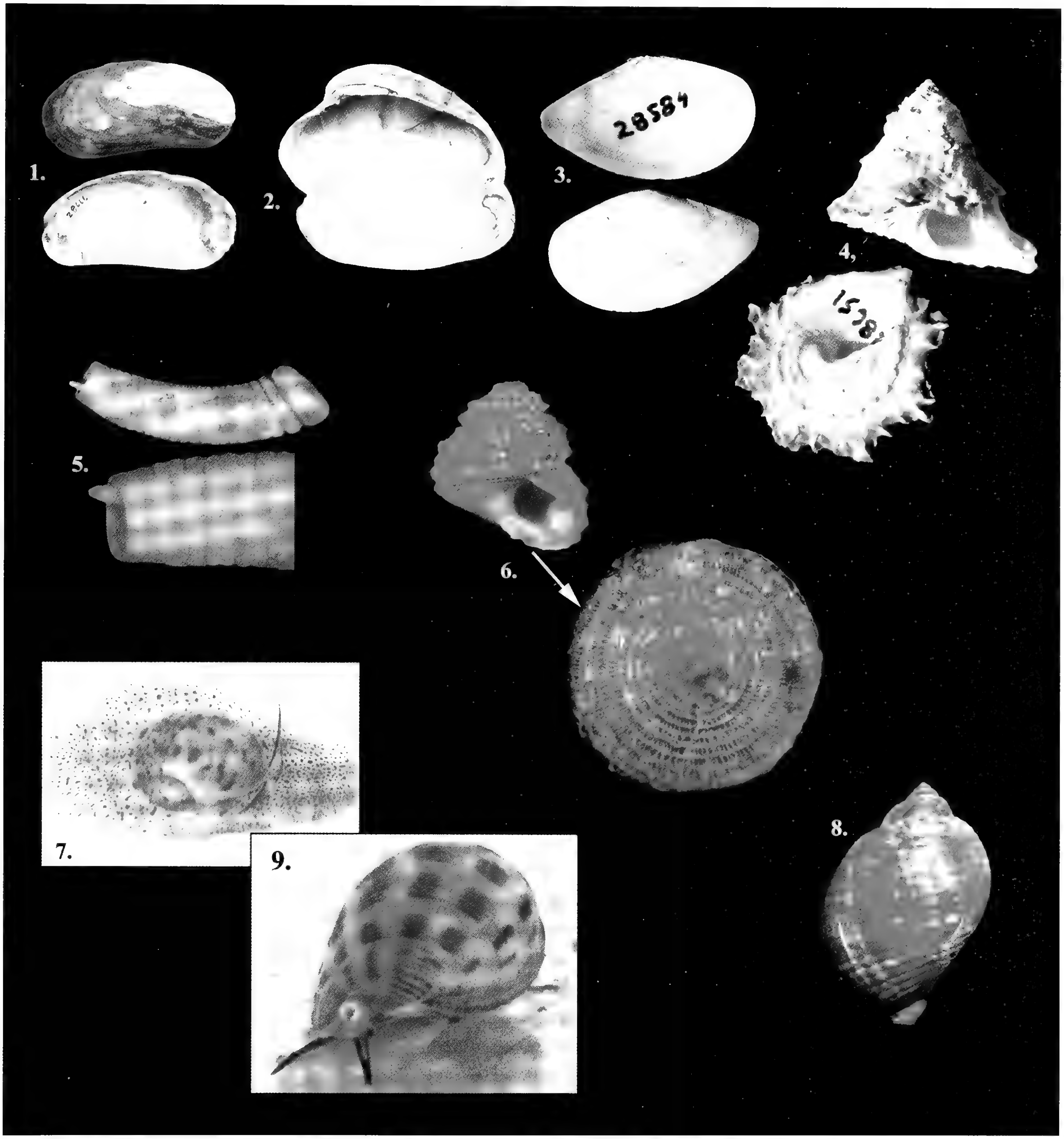
*Bursa ranelloides* (Reeve, 1844) (Fig. 11) - A single specimen, collected alive, was dredged in 86-98m. This very interesting specimen is a form that has been called *Bursa (Colubrinella) benvegnuae* Penna-Neme & Leme, 1978. This taxon was described from Brazilian waters and is rather indistinguishable from the Indo-Pacific specimens of *Bursa ranelloides*. The subspecific name *B. r. tenuisculpta* Dautzenberg & Fischer, 1906, has been used for the finely sculptured western Atlantic form; however, as Cossignani concluded in his *Bursa* monograph (1994: 86), there seems to be little doubt that *B. r. benvegnuae* and *B. r. tenuisculpta* are only forms of *Bursa ranelloides* and have no sub-specific value. The illustrated specimen of *Bursa ranelloides* from Louisiana was collected and photographed by Charlotte Thorpe and identified by Dr. Harry Lee.

*Chicoreus (Siratus) consuela* (A. H. Verrill, 1950) (Fig. 14) - Although still uncommon, this is the most frequently dredged muricid on the pinnacles off Louisiana. It has been found alive in 58-92m. A rare yellow form of this species was collected on this trip.

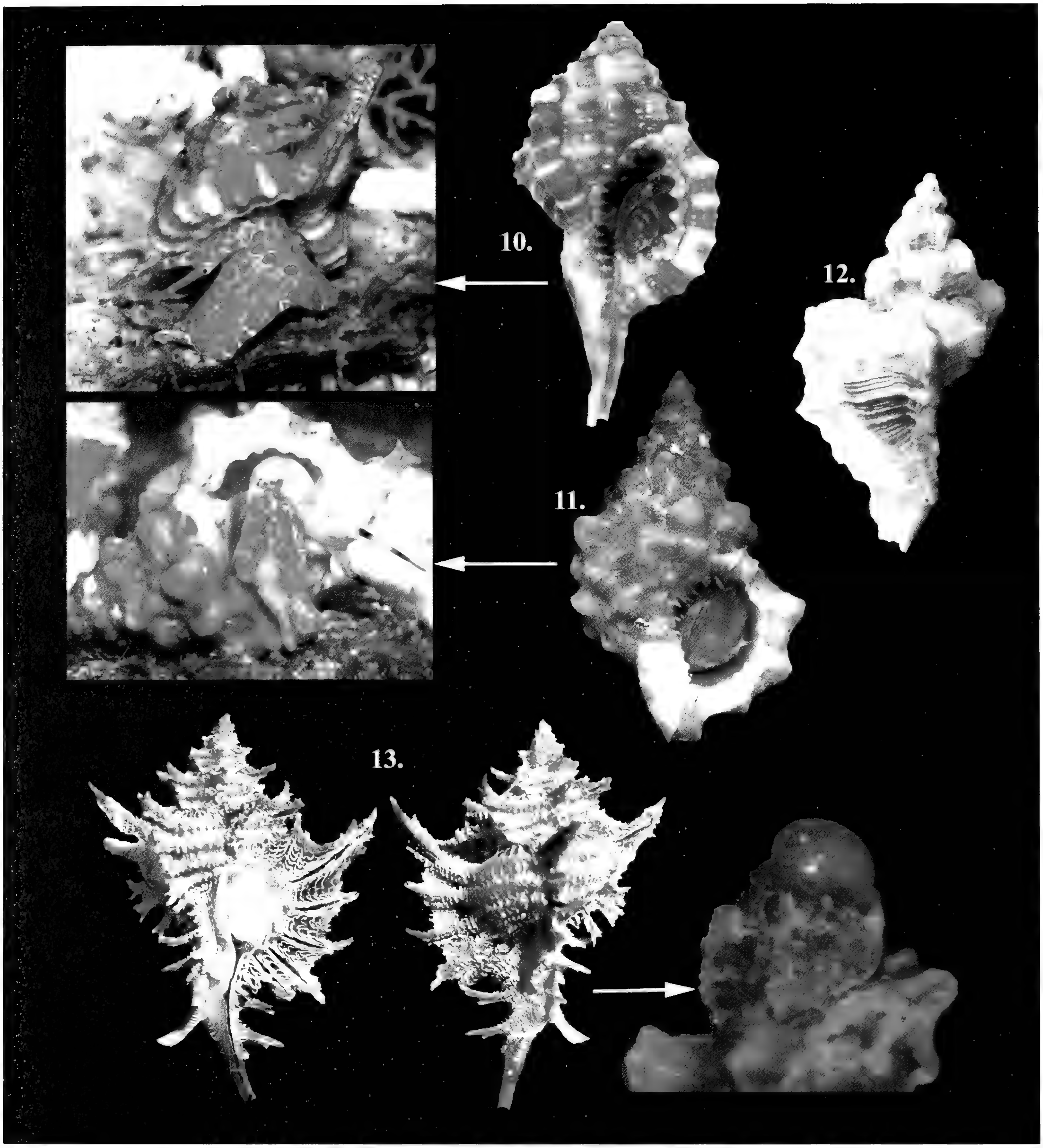
*Antillophos chazaliei* (Dautzenberg, 1900) (Fig. 15) - This species is uncommon on pinnacles with a combination of sediment and rubble, as well as in finer sediment at the edge of pinnacles. The taxon was brought back from oblivion by Dr. Tom Watters (2008), who identified the species from Louisiana. A live specimen was dredged in 68-73m.

*Morum dennisoni* (Reeve, 1842) (Fig. 17) - Specimens from Louisiana are darker than those from Colombia. They have been collected on top of the pinnacles, in rubble, but this particular specimen was extracted while sifting through the single haul of sediment when the dredge missed the top of the pinnacle.

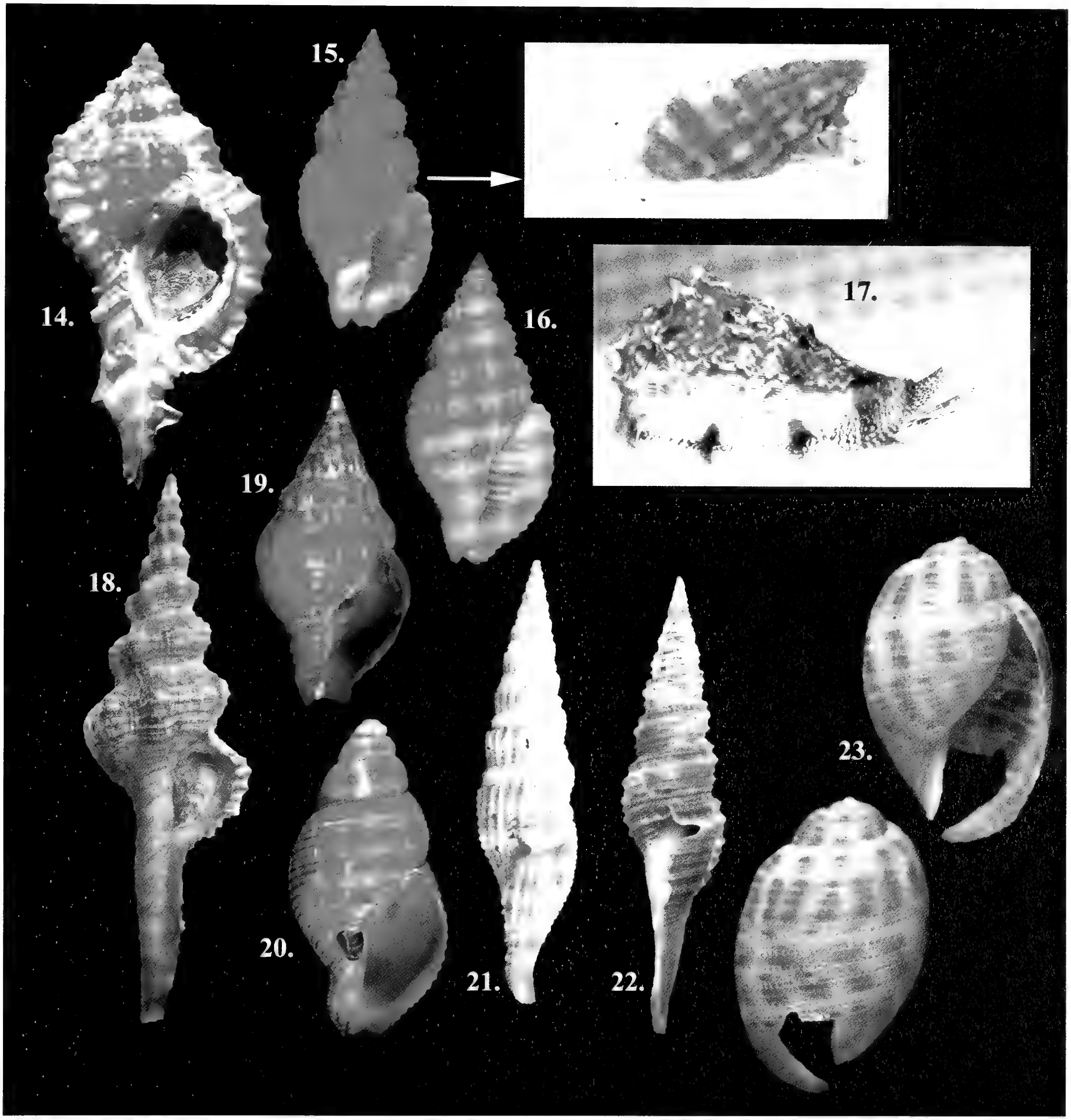
*Vexillum arestum* (Rehder, 1943) (Fig. 19) - One sub-adult specimen was dredged in 67m, in rubble. The Louisiana specimen seems to




1 - *Bathymodiolus childressi* Gustafson, Turner, Lutz, & Vrijenhoek, 1998; 115mm, 27°35.156'N to 27°35.004'N, 91°08.609'W to 91°05.766'W, in 950 - 833m, (EFG 28666). 2 - *Calyptogena ponderosa* Boss, 1968; 94.7mm, (EFG 28667). 3 - *Macoma limula* Dall, 1895; 27°35.974 to 27°35.507'N, 92°46.138'W to 92°43.967'W, in 875 - 884m (EFG 28584). 4 - *Lithopoma tectum* (Lightfoot, 1786); 24mm, 28°05.548'N, 91°01.040'W, in 58m (EFG 28651). 5 - *Caecum floridanum* Stimpson, 1851; 4.3mm, 28°03.748'N, 92°27.523'W, in 64-66m (Charlotte Thorpe coll.). 6 - *Arene bairdii* (Dall, 1889); 6.6mm, 28°05.009'N to 28°05.348'N, 91°11.365'W to 91°09.093'W, in 110-109m, plus opercular details (EFG 28616). 7 - *Natica marochiensis* (Gmelin, 1791); 28°04.147'N to 28°04.438'N, 91°46.845'W to 91°45.163'W, in 99.7-99.1m (EFG 28635). 8 - *Tonna pennata* Mørch, 1852; 28°05.849'N, 91°01.539'W, in 57-62m (EFG 28578). 9 - *Sconsia striata* (Lamarck, 1816); 28°04.675'N to 28°05.020'N, 91°38.545'W to 91°36.140'W, in 100-104m (EFG 28618).




10 - *Cymatium rehderi* A. H. Verrill, 1950; 47mm, 28°03.748'N, 92°27.523'W, in 64-66m, plus living animal (photo by Charlotte Thorpe). 11 - *Bursa ranelloides* (Reeve, 1844); 27°49.014'N, 92°53.756'W, in 92-86m, plus in situ image (Charlotte Thorpe coll.; photo by Charlotte Thorpe). 12 - *Murexiella hidalgoi* (Crosse, 1869); 26.2mm, 28°05.009'N to 28°05.348'N, 91°11.365'W to 91°09.093'W, in 110-109m (EFG 28604). 13 - *Pteropurpura bequaerti* (Clench & Pérez Farfante, 1945); 28°04.675°N to 28°05.020'N, 91°38.545'W to 91°36.140W, in 100-104m (EFG 28621), including protoconch detail.




**14 - *Chicoreus* (*Siratus*) *consuela* (A. H. Verrill, 1950); 48mm, 27°48.165'N, 93°03.058'W, in 58-61m (EFG 28529). 15 - *Antillophos chazaliei* (Dautzenberg, 1900); 16.2 mm, 28°36.905'N, 89°32.658'W, in 65-80m, plus living animal (EFG 28588). 16 - *Antillophos virginiae* Schwengel, 1942; 19.7mm (EFG 26121). 17 - *Morum dennisoni* (Reeve, 1842); 27°51.103'N, 92°55.180'W, in 75-108m (EFG 28534). 18 - *Fusinus excavatus* (Sowerby II, 1880); 49.4 mm, 28°05.009'N to 28°05.348'N, 91°11.365'W to 91°09.093'W, in 110-109m (EFG 28605). 19 - *Vexillum arestum* (Rehder, 1943); 11.4 mm, 27°57.599'N, 92°02.619'W, in 67m (EFG 28571). 20 - *Liomesus stimpsoni* Dall, 1889; 15mm, 27°35.156'N to 27°35.004'N, 91°08.609'W to 91°05.766'W, in 950-833m (EFG 28665). 21 - *Hindsiclava macilenta* (Dall, 1889); 40.8mm, 28°03.080'N to 28°02.623'N, 91°58.641'W to 91°056.393'W, in 101-100m (EFG 28644). 22 - *Polystira* cf. *florencae* Bartsch, 1934; 35.8mm, 28°03.080'N to 28°02.623'N, 91°58.641'W to 91°056.393'W, in 101-100m (EFG 28647). 23 - *Bullina exquisita* McGinty, 1955; 9.6mm, 28°36.905'N, 89°32.658'W, in 65-80m (EFG 28589).**

be a new record for almost the entire Gulf. This species has been reported from the Bahamian Islands and the northern coast of Pinar del Río Province, Cuba, the type locality. Although there is a record from Texas, I have seen an image of the specimen and it is actually *V. pulchellum* (Reeve, 1844).

*Bullina exquisita* McGinty, 1955 (Fig. 23) - A single, broken, but very fresh, specimen of this beautiful species was dredged in 65-80m. This rare species has not been reported from the Gulf of Mexico before (Rosenberg, 2005).

**2 - Species dredged in mud at 99-110 meters**

We had not tried this ecological niche in any of our earlier *Pelican* trips because the box dredge we were using would be useless in such a soft bottom. In 2006 my colleague, Dr. Darryl Felder, built a large dredge called the "Benthic Skimmer" (see García, 2007b). It is specifically designed for a very soft mud bottom at great depths. In 2006 we tried it in very deep water, down to more than 2000m. During this expedition we decided to try this skimmer at much shallower depths, and its performance was excellent. This muddy bottom was commonly trawled in the '60s and '70s by shrimp boats, which brought to light such species as *Murexiella hidalgoi* (Crosse, 1869), *Pteropurpura bequaerti* Clench & Pérez Farfante, 1949; and *Conus armiger* Crosse, 1858. When the price of shrimp collapsed because of cheaper world markets, the bonanza ended.

Four hauls were made in these areas, three of which were very productive. One of the hauls came up almost empty, with only pieces of rotten wood ("sunken galleon!" a romantic soul would presume). Assuming that the dredge turned over when it got caught in the pieces of wood, we tried that location again and (lucky us!!), among other expected species, the haul brought up three live and (very) unexpected species: *Arene bairdii* (Dall, 1889), *Murexiella hidalgoi* (Crosse, 1869), and *Fusinus excavatus* (Sowerby II, 1880). So, the romantic soul was not too far off, but the doubloons turned out to be spiny or fusinoid. Other live species collected in the same haul were *Pteria colymbus* (Röding, 1798); *Cuspidaria rostrata* (Spengler, 1793); *Natica marochiensis* (Gmelin, 1791) (Fig. 7); *Sconsia striata* (Lamarck, 1816) (Fig. 9); *Distorsio perdistorta* Fulton, 1838; *Clathrodrillia albicoma* (Dall, 1889); *Hindsiclava macilenta* (Dall, 1889); and *Polystira* cf. *florencae* Bartsch, 1934. Here are comments on some of the species:

*Arene bairdii* (Dall, 1889) (Figs. 6) - This species is widespread in the Gulf of Mexico. We have dredged it off Louisiana, Mississippi, Alabama, west Florida, and Bahía de Campeche. It has also been reported from Texas, but this is the first time we have collected a live specimen, which has a beautifully patterned operculum with concentric and radial striae (Fig. 6).

*Murexiella hidalgoi* (Crosse, 1869) (Fig. 12) - This species has never been reported from the western Gulf of Mexico. When compared with west Florida populations the Louisiana specimens are smaller, presumably because the muddy or "woody" environment is not as conducive to growth as a more calcareous bottom area?

*Pteropurpura bequaerti* (Clench & Pérez Farfante, 1945) (Fig. 13) - Although this species has been reported from the eastern Gulf of Mexico and Texas, the single, dead, adult specimen is the first collected in all of the *Pelican* trips. The only other Louisiana specimen on record was collected by an ROV in 146.3m on the wreck of the tanker "*Halo*," sunk during WWII off the mouth of the Mississippi river.

*Polystira* cf. *florencae* Bartsch, 1934. (Fig. 22) - There is quite a nomenclatorial confusion with the Gulf of Mexico (and Caribbean) *Polystira*, and some malacologists have been wrestling with this problem for years. *Polysitra cf. florencae* was rather common in 100-110m. The shell shown here is one of three brownish specimens collected together with the white form. This particular station also produced *Sconsia striata* (Lamarck, 1816) (Fig. 9); *Mitra straminea* A. Adams, 1853; *Conus armiger* Crosse, 1858; *Clathrodrillia albicoma* (Dall, 1889); *Hindsiclava macilenta* (Dall, 1889); *Euvola "papyracea," Phyllodina squamifera* (Deshayes, 1855); and *Antillophos virginiae* Schwengel, 1942 (Fig. 16). The latter is another taxon brought back from the dead by Dr. Watters. It had also been collected on former trips but misidentified as *A. elegans* (Guppy, 1866) and *A. candeanus* (d'Orbigny, 1842).

**3 - Species dredged in mud below 400 meters**

The species listed here were collected between 450-950m, by means of the Benthic Skimmer. Three hauls were made, one of them producing mostly *Amygdalum politum* (Verrill & Smith, 1880). The other two produced the species listed below:

*Bathymodiolus childressi* Gustafson, Turner, Lutz, & Vrijenhoek, 1998 (Fig. 1) - This is one of three species of *Bathymodiolus* from the Gulf of Mexico described by the authors (see Gustafson et al., 1998). Usually inhabiting areas around hydrocarbon vents, these mytiliids can grow to seven inches. The specimen pictured, a dead, single valve, measures 115mm.

*Calyptogena ponderosa* Boss, 1968 (Fig. 2) - A few single valves and a dead pair of valves were dredged in 950-833m. Other species collected in the same haul and not listed below were *Microcardium tinctum* (Dall, 1881); *Tindaria amabilis* Dall, 1889; *Macoma limula* Dall, 1895 (Fig. 3); *Eosipho canetae* (Clench & Aguayo, 1944); *Benthomangelia cf. antonia* (Dall, 1881); *Globidrillia smirna* (Dall, 1881); *Leucosyrinx verrillii* (Dall, 1881); *Leucosyrinx* sp.; and *Polystira florencae*.

*Liomesus stimpsoni* Dall, 1889 (Fig. 20) - Sunderland & Sunderland (1992) reported this species from the Florida Keys, and I have seen specimens dredged off Key West in 200m by Mr. Frank Frumar of Kirkwood, Missouri. *L. stimpsoni* however, has not been reported from anywhere else in the Gulf of Mexico. My identification of the single juvenile was confirmed by Dr. Harry Lee, who also informed me that he has in his collection a specimen of *L. stimpsoni* collected by Jim Moore in 1965 in 500-600ft at 29.1° N by 92.4° W, which places the specimens squarely off the Louisiana coast.

*Hindsiclava macilenta* (Dall, 1889) (Fig. 21) - Although *H. macilenta* has not previously been reported from the northwestern Gulf of Mexico, it was collected on this trip at four stations, from 100 to 950m.

I would like to thank Bill Cargile for sponsoring this interesting trip, Charlotte Thorpe for allowing me to use her material, and Harry Lee for making me aware of Charlotte's finds. For a complete list and many images of mollusks collected off the Louisiana coast, please go to http://www.jaxshells.org/efg1030.htm. The jaxshells web site is superbly managed by Mr. Bill Frank, of Jacksonville, Florida. I take this opportunity to thank him for his efforts.

**References:**

**Cossignani, T.** 1994. Bursidae of the World. L'Informatore Piceno: Ancona, Italy, 119 pp.

**García, E. F.** 1999. New molluscan records for the northwestern Gulf of Mexico. *American Conchologist* 27(2), 27-28.

**García, E. F.** 2000. Surprising new molluscan records from Louisiana and the northwestern Gulf of Mexico. *American Conchologist* 28(3), 5-6, 31.

**García, E. F.** 2002. More discoveries from a collecting expedition off the Louisiana coast. *American Conchologist* 30(1), 6-7, 10.

**Garcia, E. F.** 2005. A dredging trip in the Gulf of Mexico. *Of Sea and Shore* 27(1), 4-8.

**García, E. F.** 2007a. Report on mollusks collected in a dredging expedition to Bahía de Campeche, southwestern Gulf of Mexico. *American Conchologist* 35(2), 4-11.

**García, E. F.** 2007b. Results of deep-water dredging in the Gulf of Mexico using the "Benthic Skimmer," and report on several geographic extensions, including two species not previously reported in the western Atlantic. *The Festivus* 39(2), 13-18.

**García, E. F. & Lee, H. G.** 2002. Report on molluscan species found in the offshore waters of Louisiana, including many extensions of known range and un-named species. *American Conchologist* 30(4), 10-13.

**García, E. F. & Lee, H. G.** 2003. Report on molluscan species found in the offshore waters of Louisiana, including many extensions of known range and un-named species II. *American Conchologist* 31(1), 26-29.

**Gustafson, R. G., R. D. Turner, R. A. Lutz & R. C. Vrijenhoek.** 1998. A new genus and five new species of mussels (Bivalvia: Mytilidae) from deep-sea sulfide/hydrocarbon seeps in the Gulf of Mexico. *Malacologia* 40 (1-2), 63-112.

**Rosenberg, G.** 2005. Malacolog 4.1.0: A Database of Western Atlantic Marine Mollusca. [WWW database (version 4.1.0)] URL http://www.malacolog.org/.

**Sunderland, K. & L. Sunderland.** 1992. Western Atlantic miscellany. *American Conchologist* 20(4), 14-15

**Watters, G. T.** 2008. Small western Atlantic Buccinidae. Part 2. The genus *Antillophos* Woodring, 1928. *American Conchologist* 36(3), 5-7.

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# The "Buzz" on Abalones - Two Recent "World Record" Australian *Haliotis* From the Collection of Robert "Bob" Kershaw of Narooma, New South Wales (N.S.W.), Australia

**Buzz Owen**

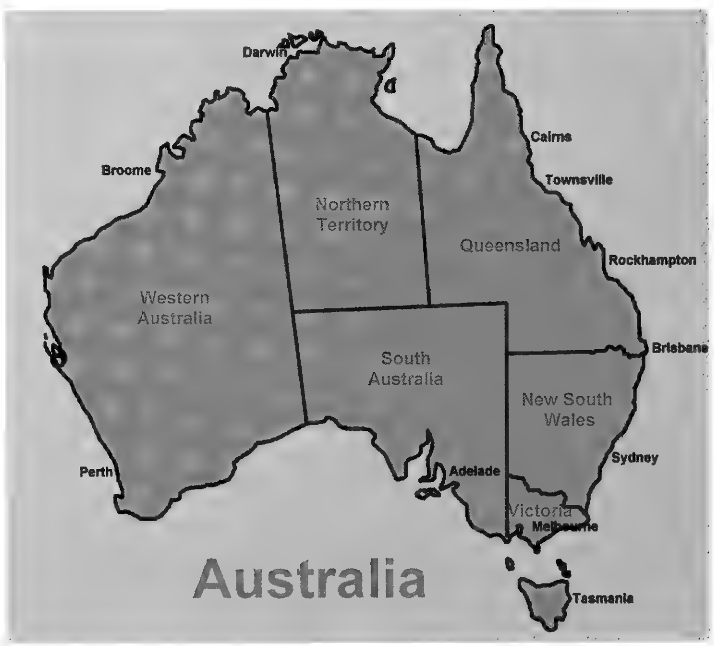
This segment of the occasional column I write exploring world record *Haliotis* will focus on two Australian species; one species is distributed in a small area of Western Australia, and the other species is endemic to Victoria and New South Wales. Both shells reside in the collection of Robert "Bob" Kershaw, the impassioned die-hard *Haliotis* collector of Narooma, New South Wales, whose collection of Australian abalones is second to none, both in variety and sheer volume of material!

This report will be the first of several that will explore the world record specimens of a number of *Haliotis* taxa in Bob's collection. Future segments will cover *H. roei* Gray, 1826, *H. rubra conicopora* Leach, 1814, *H. cyclobates* Péron, 1816, *H. scalaris scalaris* Leach, 1814, plus a truly giant specimen of *H. dalli* Henderson, 1915, from the Galápagos Islands off Ecuador, to name but a few.

***Haliotis coccoradiata* Reeve, 1846:** This small species is fairly common and is currently known to be distributed along the coast of New South Wales, between Victoria and Queensland. Based upon my experience with this taxon, I would consider specimens over 50mm quite large, and shells over 60mm exceptionally large and rather uncommon. That being said, the new record, which measures 75mm, is a giant shell indeed! That the previous record measured almost 20% smaller (65mm), underscores this fact. The specimen was obtained at a shell auction, and apparently came from an old collection. It's locality data are unknown. Unlike most "world record" specimens, which are in rather poor condition, the shell is in gem (or near gem) state (illustrated on Plate 1).

*Haliotis coccoradiata* is an attractive species and bears little resemblance to other Australian abalones. It is generally reddish to reddish-orange, with very "blocky" whitish-cream markings scattered randomly about, often in the pattern of prosocline rays so common to many Australian *Haliotis* taxa. Occasional specimens will be of a greenish background color with the same blotchy markings. It usually has pronounced spiral ribbing of variable strength and width, and normally possesses 5-6 fairly round open holes. Occasional specimens will have areas of smoother sculpture, generally alternating with ribbed shell morphology. It can be separated from the much less common *H. brazieri* Angas, 1869, by its spire position, which lies closer to the posterior end of the shell, and by its more numerous and much less elevated open tremata, *H. brazieri* typically having 3-4 very elevated tremata and a very smooth shell with no spiral ribbing. *Haliotis brazieri* form *hargravesi* Cox, 1869, has very wide and flat spiral ribs, not present in *H. coccoradiata*. These differences are well illustrated on Plates 2 and 3.

***Haliotis elegans* Philippi, 1844:** Across the continent of Australia, in a small localized area near Perth, Western Australia, is found a truly bizarre-looking *Haliotis*, described by Philippi as *H. elegans*. Actually, it appears to have been described earlier by Gray in 1826, as *Haliotis squamosa*, a name that now represents a species endemic to Madagascar. This somewhat confusing situation is described in detail in Vol. 27, No. 3, of "*Of Sea and Shore*" (Owen, 2006). The species was considered uncommon to rare before about 1980 or so (R. R. Talmadge, and Katherine "Kit" Stewart, pers. comm.) and, until fairly recently, live-taken specimens were unknown (R. Kershaw, pers. comm.). During the day it appears to stay deeply hidden in crevices and under coral or rubble. The shell spire is positioned at the extreme posterior end of the shell, and there is a general sculpture of extremely strong spiral ribbing with high ribs separated by deeply cut crevices. Frequently, adult specimens have a curious habit of discontinuing the development of tremata. This can lead to older specimens being almost imperforate! The only species it even distantly resembles is *H. squamosa* from Madagascar and it can easily be separated by the spire position (*H. squamosa* has the spire placed away from the posterior end of the shell, more towards the center) and by the absence of the numerous scabrous scales on the spiral ribs, which are one of the main diagnostic characters of *H. squamosa*. These differences are illustrated on Plate 3. It appears to have a very narrow distribution, thus far being known to occur between approximately Freemantle and Perth, West Australia. The world record specimen is truly a giant shell, proportioned extremely wide as well as long. The species is normally quite narrow, as is illustrated on Plates 3 and 4.



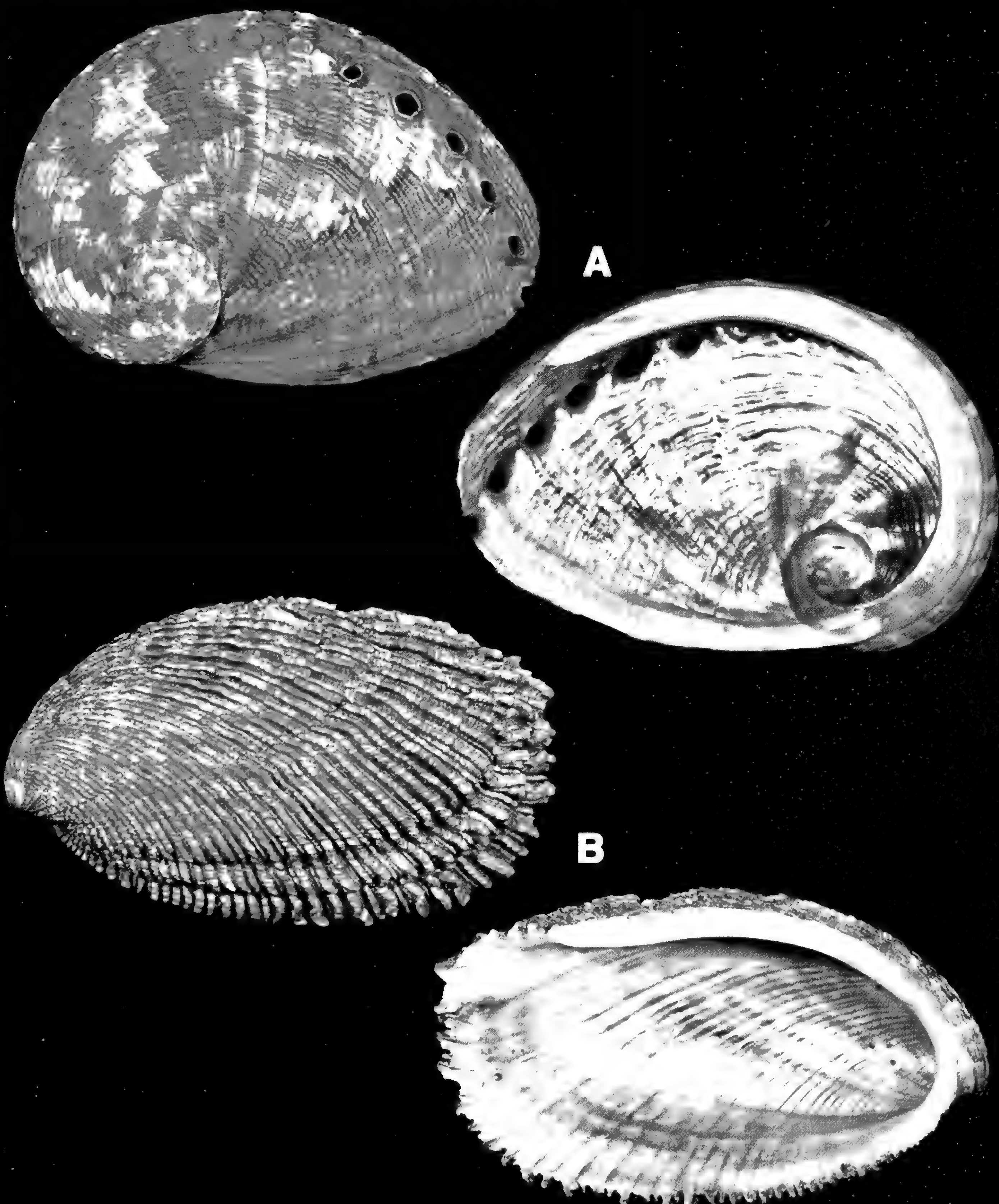



**Plate 1**

**A:** *H. coccoradiata* Reeve, 1846. W. Record: 75.0 mm. Robert Kershaw Collection. no data. 2005.
**B:** *H. elegans* Philippi, 1844. W. Record: 121.4 mm. Robert Kershaw Collection. W. Australia. 2002.

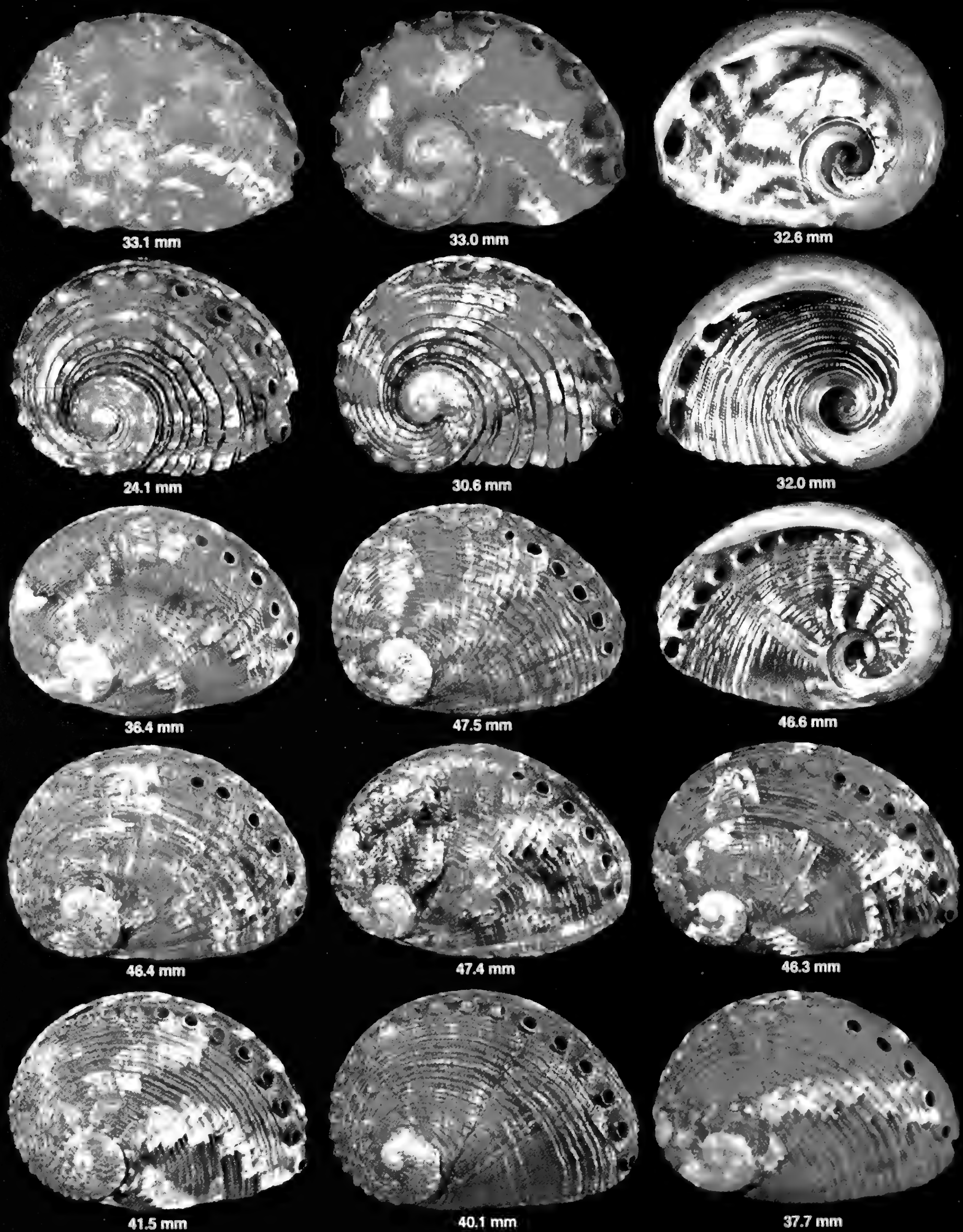



**Plate 2**

Top Row: *Haliotis brazieri* Angas, 1869. Coff's Harbour, N.S.W., Australia. 20 m.
2nd Row: *H. brazieri* form *hargravesi* Cox, 1869. Coff's Harbour, N.S.W., Australia. 20 m.
Botttom 3 Rows: *H. coccoradiata* Reeve, 1846. Bermagui, N.S.W., Australia. Beach.

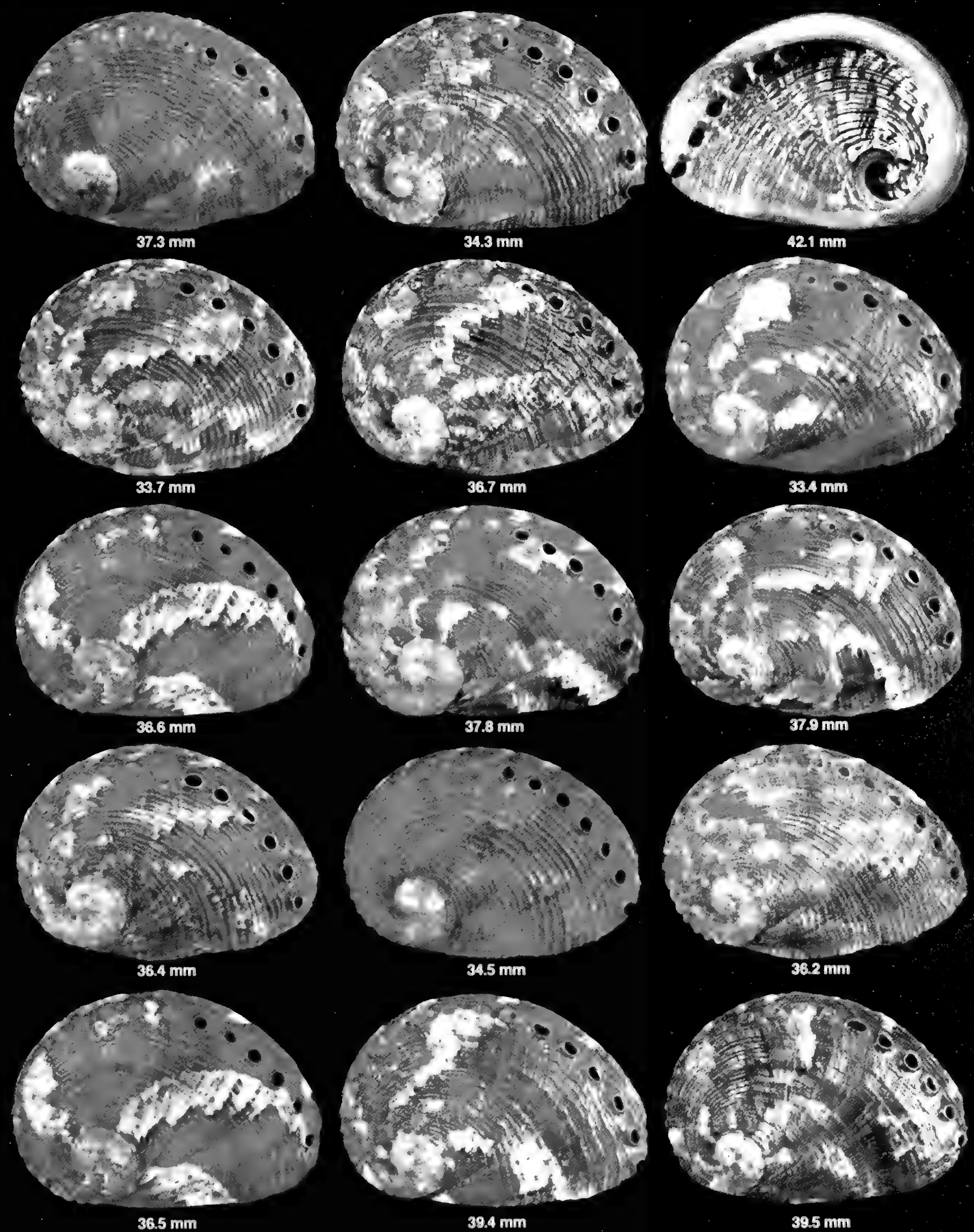



**Plate 3**

**All Rows:** ***Haliotis coccoradiata*****, Reeve, 1846. Bermagui, N.S.W., Australia. Beach.**

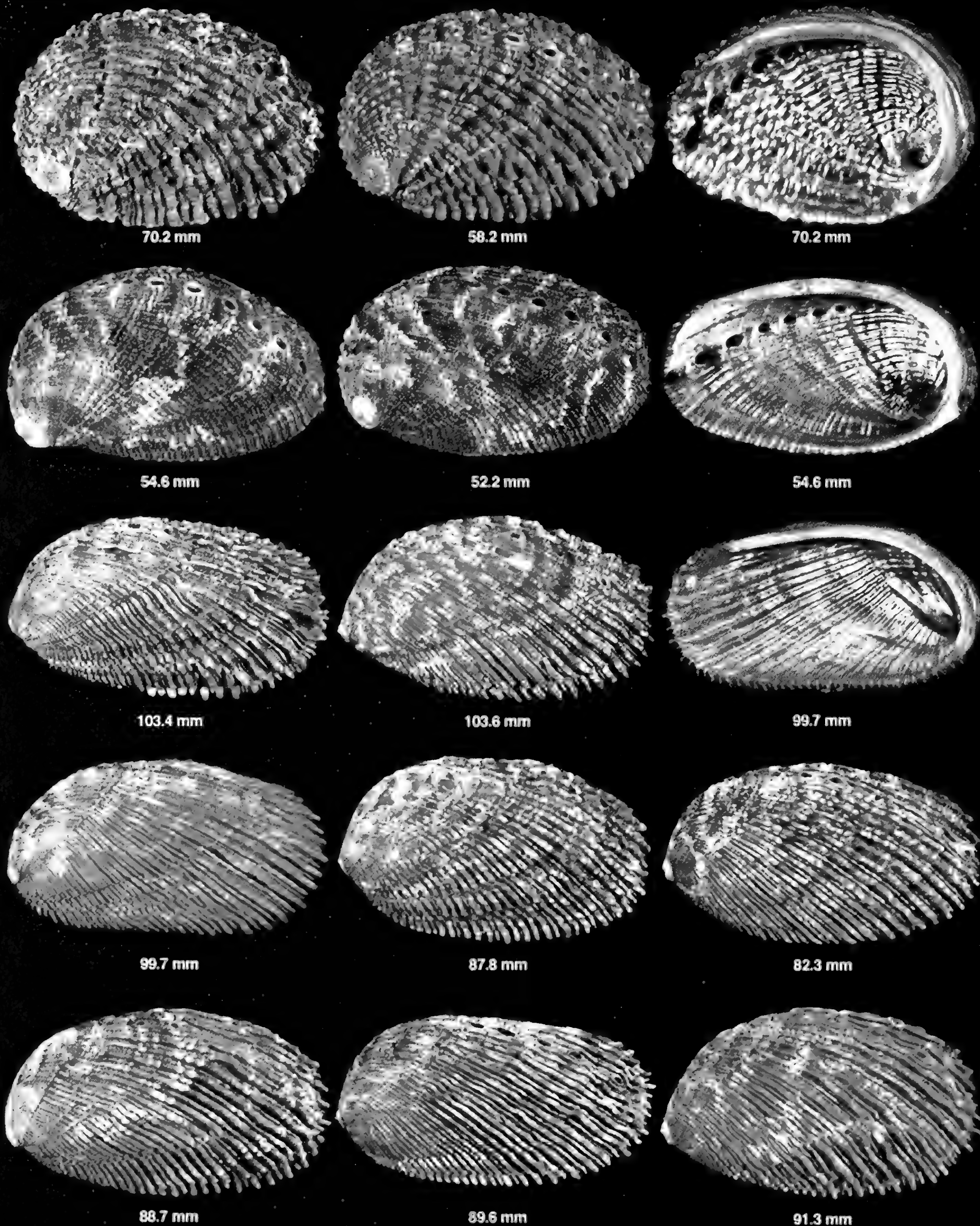



**Plate 1**

Top Row: *Haliotis squamosa* Gray, 1826. Madagascar. Beach and 5-10 m.
2nd Row: *H. diversicolor squamata* Reeve, 1846. Broome, W.A., Australia. 5-10 m.
Botttom 3 Rows: *H. elegans* Philippi, 1844. Geraldton to Freemantle, W.A., Australia. Beach and 5-10 m.

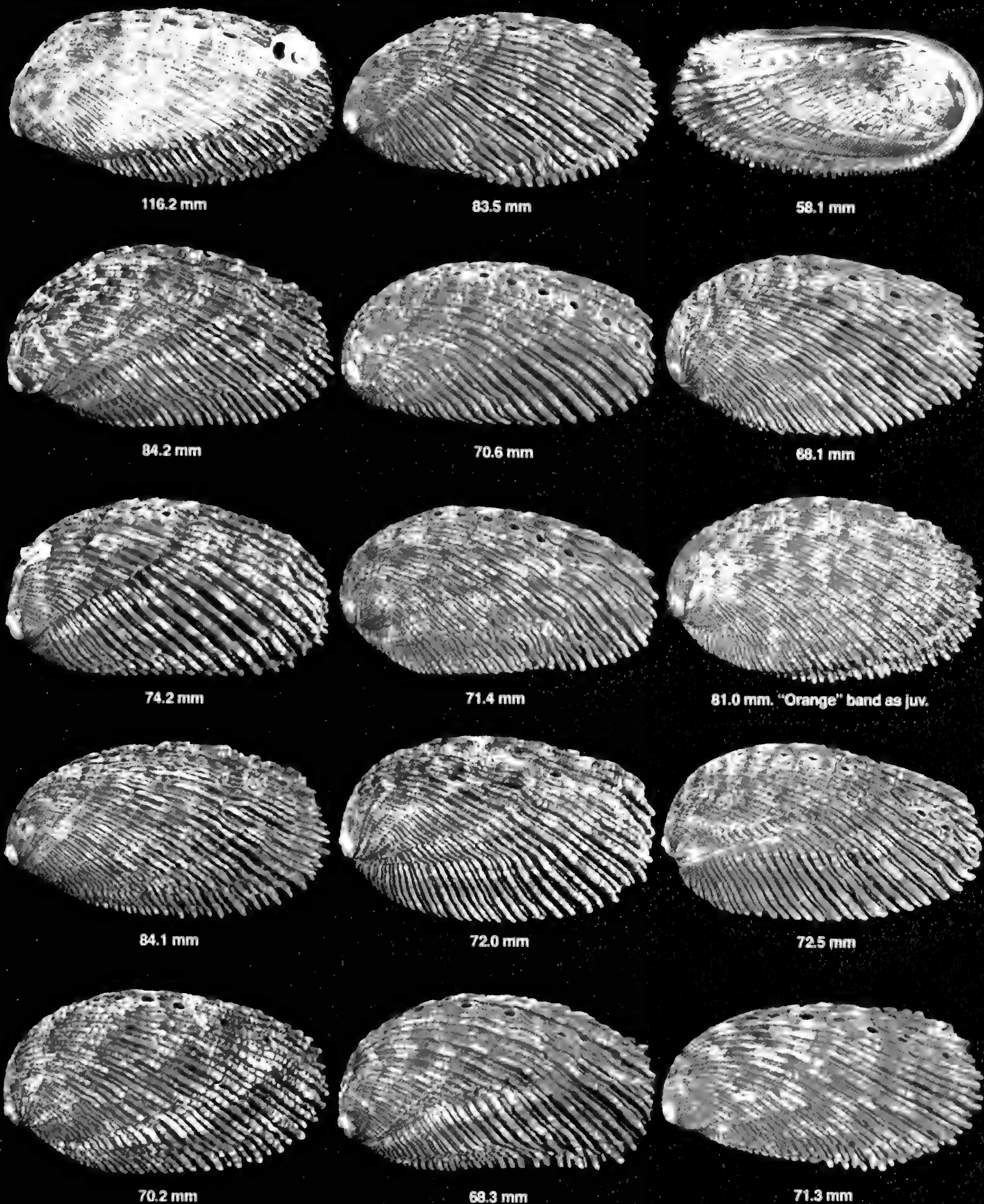



**Plate 2**

All Rows: *Haliotis elegans* Philippi, 1844. Geraldton to Freemantle, W.A., Australia. Beach and 5-10 m.

ACKNOWLEDGEMENTS

I would like to thank Steve Browning and Tom Grace for their helpful comments and editing suggestions. I also wish to give Tom credit for being first to note that Gray's description of *H. squamosa* seemed more like a description of contemporary *H. elegans*! I want to thank Bob Kershaw for his excellent images of the World Record specimens of both H. *elegans* and *H. coccoradiata*, and several other photographs as well. Bob also provided the information on the distribution extremes of the two species.

Haliotis References

**Angas, G. F.** 1869. Descriptions of Twelve New Species of Land and Marine Shells from Australia and the Solomon Islands. *Proceedings of the Zoological Society*, 4:45-49, pl. 2.

**Cox, J.C.** 1869. On a New Species of *Haliotis* from New South Wales. *Proceedings of the Zoological Society*, 4:49.

**Dall, W. H.** 1881. Preliminary Report on the Mollusca. In: Reports on the Results of Dredging, under the Supervision of Alexander Agassiz, in the Gulf of Mexico, and the Caribbean Sea, 1877-79, By the U.S. Coast Survey Steamer "*Blake*." *Bulletin of the Museum of Comparative Zoology*, 9: 33-144.

**Geiger, D. L. and G. T. Poppe.** 2000. Family Haliotidae. In: Poppe, G. T. and Groh, K. (Eds). "A Conchological Iconography," Conchbooks, Hackenheim, Germany, 135pp, 83pls.

**Lamarck, J. B.** 1822. "Natural History of the Animals Without Vertebrae," T.6(2), 1-232.

**Leach, W. E.** 1814. "The Zoological Miscellany," Vol. 1, McMillan, London, 144 pp.

**Gray, J. E.** Narrative of a Survey of the Intertropical and Western Coast of Australia Performed Between the Years 1818 and 1822 by Captain Phillip P. King, Vol. II, Appendix B: 474-496.

**Owen, B.** 2006. The "Buzz" on Abalones: The Rediscovery of *Haliotis squamosa* Gray, 1826 – the Real Story. *Of Sea and Shore*, 27:3:164-169.

**Philippi, R. A.** 1842-1845. "Illustrations and Descriptions of New and Little Known Shells," Theodor Fischer, Cassel, 484 pp.

**Reeve, L.** 1846. Monograph of the Genus *Haliotis*. 22 pp., 17 pls.

Buzz Owen
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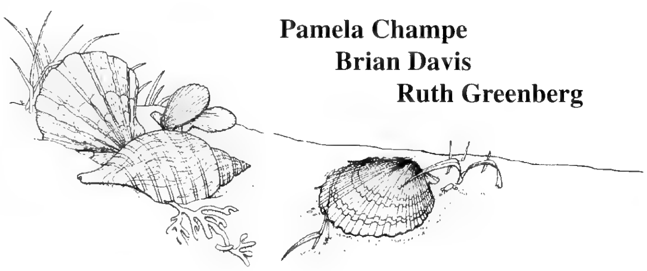
**In Memoriam:**

**Pamela Champe**
**Brian Davis**
**Ruth Greenberg**



# Constitution
# of the
# Conchologists of America, Inc.

**Draft amendment 24 March 2008 by H. G. Lee**

Pursuant to changes necessitated by the growth of the organization, in the interest of more expeditious and just conduct of its business affairs, and consistent with ARTICLE IX of the Constitution of the Conchologists of America, Inc., the following is a proposed amendment to said document. Only provisions in ARTICLE VII Paragraphs C. and D. are to be amended thus (underlined addenda; ~~stricken-through~~ deletions):

**ARTICLE 1: NAME**

Para. A The name of the organization is **CONCHOLOGISTS OF AMERICA, INC.,** A non-profit organization referred to as COA.

**ARTICLE II: PURPOSE**

Para. A The purposes of this organization are to disseminate knowledge about mollusks, to encourage research on mollusks, and to increase the awareness of the need for preserving habitats and the health of molluscan populations through meetings, lectures, publications, grants and exhibits.

Para. B The organization will have all the general purposes enumerated in Section 202 Of the Non-For-Profit Corporation Law of the State of Florida.

Para. C The location of the principal office is designed as the address of the Treasurer during the incumbent's term of office.

**ARTICLE III: TERMS OF EXISTENCE**

Para. A. This organization exits in perpetuity.

Para. B The organization is operated without profit. No part of the assets or income is distributed to, or inure to, the benefit of any member, officer, or other private individual. However, reasonable expenses may be reimbursed for services rendered to or for the organization affecting one or more of its purposes.

Para. C. In the event of dissolution, no member, officer, or private individual is entitled to share in the distribution of the assets, but such assets will be donated, transferred, delivered, or conveyed to one or more organizations engaged in similar activities that have qualified under Section 501 (C) (3) or corresponding provisions of the Internal Revenue Code as a non-profit organization.

Para. D. COA, being a non-partisan organization, does not endorse any candidate for political office.

**ARTICLE IV: MEMBERSHIP**

Para. A. Membership is open to all individuals, family households, clubs and other organizations interested in the study, collection, and/or conservation of mollusks. There is no restriction of membership by reason of race, creed, color, sex, religion, or country of origin.

Para. B. There are four (4) classes of membership.

1. Individual
2. Family Household
3. Organizational
4. Honorary

Para. C. 1. Individual: Individual membership is open to any individual who applies and pays the dues for this class. Only persons 18 years or older are entitled to vote.

2. Family Household: Family Household membership is open to any household which applies and pays the dues for this class. A household is defined as two or more individuals living at the same address. Only persons 18 years or older are entitled to vote. A household receives one (1) copy of notices and publications. Only one adult member of the household may hold an elective office at any one time.

3. Organizational: Membership is open to any club, school, museum, business

or organization which applies and pays the dues for this class. An organization receives one (1) copy of notices and publications. The entity of the organization is not entitled to vote.

4. Honorary: Any individual, in recognition of outstanding contributions to COA, may be elected to Honorary membership. An Honorary member need not pay dues. Full voting privileges and the right to hold office are extended only to those who were dues-paying members at the time of their election to honorary membership.

**ARTICLE V: DUES**

Para A. Dues: The dues for each class of membership are established by the Board of Directors subject to approval by the members at the annual meeting.

Para. B. Only persons whose dues are paid for the current year, or Honorary as defined in Article IV, Para.C. 4, are members in good standing and eligible to vote and hold office.

**ARTICLE VI: MEETINGS**

Para. A. The annual meeting of members is held at the annual convention.

Para. B. In the event a convention cannot be held, the Board of Directors will take the necessary steps to properly conduct business.

**ARTICLE VII: OFFICERS AND BOARD OF DIRECTORS**

Para. A. The elected officers are President, Vice President, Secretary, Treasurer, and Trustee.

Para. B. These officers, together with the immediate surviving Past President, constitute the Executive Committee.

Para. C. The President appoints, subject to confirmation by the Executive Committee, ~~the following Directors~~ Committee Chairmen such as:

1. Membership
2. Editor, ~~AMERICAN CONCHOLOGIST~~ *American Conchologist*
3. Finance
~~4.~~ ~~Educational~~ Academic Grants
5. COA Awards
6. Publications
7. Public Relations
8. Archives (Historian)
9. Property Manage~~r~~ment
10. Convention Coordination

Para. D. The Executive Committee, together with ~~the Directors~~ no less than one-half of the Committee Chairmen and up to three (3) At-large Members, all appointed by the President with approval of the Executive Committee, constitutes the Board of Directors. The Board of Directors has all the powers of the organization in the intervals between meetings. These members have full voting privileges on matters brought before the Board.

**ARTICLE VIII: SPECIAL COMMITTEES**

Para. A. Special committees, such as Nominating and Audit, are appointed by the President with approval of the Executive Committee.

Para. B. Special committees will report to the Board of Directors but have no vote on business brought before the Board.

**ARTICLE IX. AMENDMENTS TO THE CONSITUTION AND BYLAWS.**

Para. A. This Constitution may be amended in whole or in part at any annual meeting provided the entire membership is notified of such proposed revisions at least Thirty (30) days prior to the meeting.

Para. B. This Constitution may be amended at other than the annual meeting by members returning mailed ballots. Written notice of the proposed amendments and ballots are sent to all members of record. The deadline for voting is no less than forty-five (45) days after mailing the written notice.

Para. C. The Bylaws may be amended by the Board of Directors at any time, subject to the approval of members attending the annual meeting or by mailed ballot.

Para. D. All amendments to the Constitution and Bylaws following ratifications will be published in the official COA Publication, *American Conchologist*.

# 2009 SHELL SHOWS & RELATED EVENTS (Jan. – Jul.)

**- Following information is subject to change. Please verify with individual organizations -**

Jan. 17-18 2009
**SPACE COAST SEASHELL FESTIVAL,** Melbourne, FL
The Melbourne Auditorium, 625 E. Hibiscus Blvd.
Jim & Bobbi Cordy, 385 Needle Blvd.
Merritt Is., FL 32953 (321) 452-5736
E-mail: corshell@earthlink.net

Jan. 30-Feb. 1 2009
**BROWARD SHELL SHOW**, Pompano Beach, FL
Pompano Beach Recreation Center, NE 18th Av. & NE 6th St.
Nancy Galdo/Richard Sedlak, 4266 Chase Ave.
Miami Beach, FL 33140-3008 (305) 531-0036
E-mail: nancygaldo@gmail.com

Feb. 13-15 2009
**SARASOTA SHELL SHOW**, Sarasota, FL
Sarasota Municipal Auditorium, Tamiami Trail
Sandy Pillow, 11017 Jasmine Circle
Bradenton, FL 34209 (941) 792-2529
E-mail: spillow6@comcast.net Cell: (810) 516-6120

Feb.28-Mar. 1 2009
**ST. PETERSBURG SEA SHELL SHOW**, Seminole, FL
Seminole Recreation Center, 9100 113th St., N., Seminole, FL
Bob & Betty Lipe, 348 Corey Avenue
St. Pete Beach, FL 33706 (727) 391-2197
E-mail: blipe@tampabay.rr.com FAX: 360-3668
Exhibit form available at web site: http://www.stpeteshellclub.org

Mar. 5-7 2009
**SANIBEL SHELL SHOW**, Sanibel, FL
Sanibel Community Center, Periwinkle Way
Irene Longley, 2823 8th Ave.
St. James City, FL 33956-2133 (239) 283-7417
E-mail: milsfrills@cs.com

Mar. 12-14 2009
**MARCO ISLAND SHELL CLUB SHOW XXIX**, Marco Is., FL
Marco Presbyterian Church, Elkcam Circle
Linda Shockley, 348 Colonial Avenue
Marco Island, FL 34145 (239) 394-5416
E-mail: marco-sheller@earthlink.net

Mar. 14-15 2009
**XXIème RECONTRES INTERNATIONALES DU COQUILLAGE,** Paris, France
Bourse de Commerce, 2 rue des Viarmes, 75004 Paris, France
M. & D. Wantiez, 88, Rue du General Leclerc
95210 Saint Gratien, France 33 (1) 34-17-00-39
E-mail: wantiez.mada@wanadoo.fr

Mar. 27-29 2009
**NEW ZEALAND SHELL SHOW,** Auckland, New Zealand
Pakuranga Community & Cultural Centre, 13 Reeves Rd, Pakuranga.
Conchology Section, Auckland Museum Institute
E-mail: peter.poortman@xtra.co.nz
Website: http://nz_seashells.tripod.com

Apr. 24-26 2009
**OREGON SHELL SHOW**, Portland, OR
Oregon Museum of Sci. & Industry, 1945 SE Water Ave.
Donna Saffir, 10409 NW Burkhardt Court
Portland, OR 97229 (503) 297-3009
E-mail: dragonz@comcat.net

May 2 2009
**BRITISH SHELL COLLECTOR'S CLUB CONVENTION,** Essex, England
Theydon Bois Community Centre, Essex
Tom Walker, 38 Redlands Road
Reading, Berkshire RG1 5HD, England 44 (118) 987-4294
E-mail: tom@tmwalker.co.uk

May 9-10 2009
**XIX BELGIUM INTERNATIONAL SHELL SHOW**, Antwerp, Belgium
Schijnpoort, Schijnpoort Straat
Charles Krijnen, Burgemeester Jansenstraat 10
NL-5037 NC Tilburg, Nederland 31 (13) 463 0607
E-mail: bvc.shellshow@planet.nl
Web site: www.bvc-gloriamaris.be/beurs_e.htm

May 29-31 2009
**JACKSONVILLE SHELL SHOW,** Jacksonville, FL
Morocco Shrine Temple, 3800 St. Johns Bluff Road
Charlotte Thorpe, 1010 N. 24th St.
Jacksonville Beach, FL 32250 (904) 246-0874
E-mail: challoyd@bellsouth.net

Jul. 19-23 2009
**AMERICAN MALACOLOGICAL SOCIETY ANNUAL MEETING**, Ithaca, NY
Details to be announced

Jul. 19-23 2009
**CONCHOLOGISTS OF AMERICA ANNUAL CONVENTION,** Clearwater Beach, FL
Hilton Clearwater Beach Resort, 400 Mandalay Avenue
Alice Monroe/Carolyn Petrikin, P.O. Box 1564
Palm Harbor, FL 34682-1564 (727) 796-4117
E-mail: COA2009@aol.com
Web site: www.conchologistsofamerica.org

Jul. 11-12 2009
**KEPPEL BAY SHELL SHOW,** Yeppoon, Queensland, Australia
Yeppoon Town Hall
Jean M. Offord, 277 McDougall St.
N. Rockhampton, Qld. 4701, Australia (7) 4928-3509

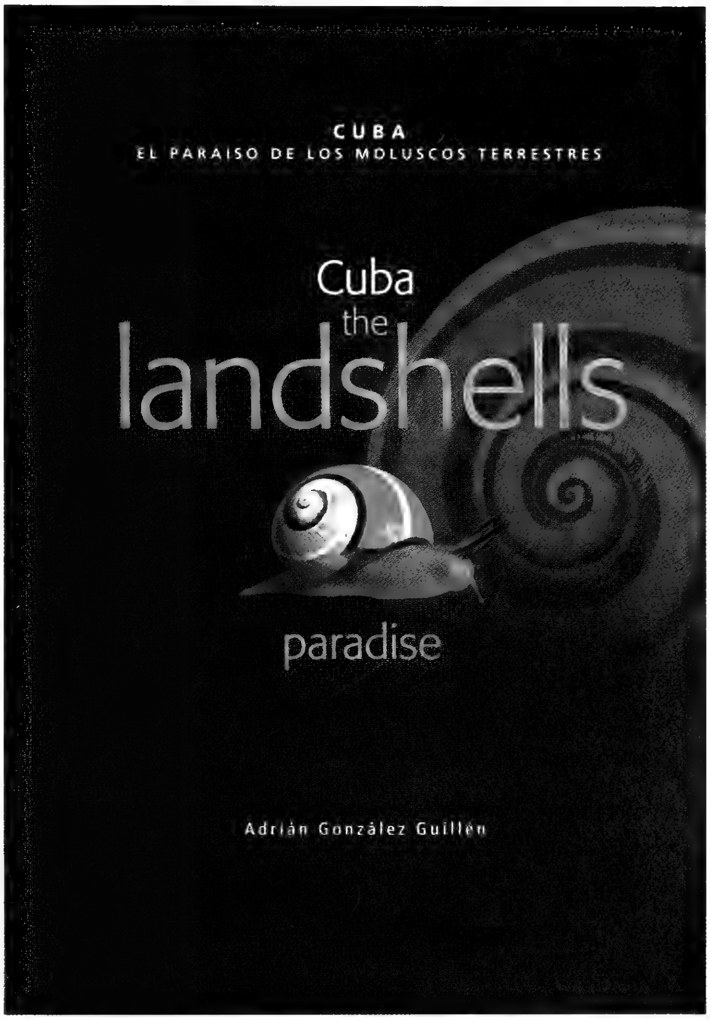
Jul. 18-19 2009
**TOWNSVILLE SHELL SHOW**, Townsville, Queensland, Australia
Cutharinga Bowls Club on Harold Street, West End
Glenda Rowse, 19 Farrell Street
Kirwan 4814, Queensland, Australia (7) 4773-2817

**DONALD DAN**, COA Award Chairman
6704 Overlook Drive
Ft. Myers, FL 33919
U.S.A.
Tel. Voice & Fax (239) 481-6704 • E-mail: donaldan@aol.com

# Book Review: Cuba, the Landshells Paradise

## By Adrián González Guillén, 2008, Greta Editores, Lleida, Spain, 307

If you have even the slightest interest in land snails, then you know Cuba has some of the most colorful and intricately sculptured land snails in the world. From the brilliant splashes of red, orange, yellow, black, and green found in the families Orthalicidae (e.g. *Liguus*) and Helmintoglyptidae (e.g. *Polymita*), to the spines, frills, and ruffles of the family Annulariidae, Cuban land snails are second to none as show pieces of the phylum Mollusca. Added to this is the intriguing fact that of the over 1,400 described species of Cuban land snails, approximately 1,350 are endemic. This is an endemism rate of 96%, higher than any other land snail population except New Caledonia, Oahu, Easter Island, and maybe Sri Lanka. Interestingly, all four of these localities combined have fewer total species of land snails than are found on Cuba. So where do you go to find information about Cuban land snails? Until recently you were pretty much limited to scholarly tomes over 100 years old by authors such as d'Orbigny, Tryon, and Pilsbry, or more recent specialized monographs; none of which are readily available to the average shell collector. The two most widely available and popular books on land snails, "Tropical Land Shells of the World," by Parkinson, Hemmen, & Groh (1987) and "The Compendium of Landshells," by Abbott (1989), cover only a very small portion of Cuban land snail fauna and provide little of the natural history of this island. Adrián González Guillén has corrected this deficiency.




"Cuba, the Landshells Paradise" by Guillén is a comprehensive and colorful presentation of Cuba's exotic molluscan fauna and how this fauna fits into and interacts with the various landscapes of this island nation. This is not an identification book, although there are 25 color plates illustrating the major land snail families found on Cuba with hundreds of species and color varieties beautifully illustrated. More importantly, there are 250 pages of text and color plates (at least one color plate on almost every page), most with images of living snails in situ. This represents an amazing amount of research and lots of difficult field and lab work.

The book is written in Spanish with a side-by-side English translation. Chapters include: Introduction (with an overview of the malacologists who studied Cuban land snails), Conquering the Land (a review of molluscan taxonomy and the development of terrestrial snails), The Diversity of Cuban Molluscs (the paleogeography of Cuba, zonal habitat development, and species-rich habitats), An Approach to the Ground Dweller Cuban Landsnails (different terrestrial environments and associated land snails), Rock-dwelling Molluscs (different rocky environments and associated land snails), Arboreal Molluscs and Natural Forests (the shrinking forested environments and associated land snails), *Polymita*, Multi-coloured Fragility (the fascinating story of this beautiful land snail, protected in Cuba since the early 1940s because of its beneficial relationship with the coffee plant), S.O.S. *Liguus* (a comprehensive review of the four species of *Liguus* found in Cuba and their plight due to loss of habitat), Predators and Survival Strategy (molluscan predators, some unique to Cuba, and the ways different land snails cope with predation), Threatened or Endangered (the impact of man on worldwide island snail faunas and what can and should be done to protect the species still extant), and the aforementioned color plates. This listing of chapters should provide some idea of the in-depth look Guillén provides of Cuba and Cuban land snails. Bear in mind that all of this text is more than liberally interspersed with color plates of living Cuban mollusks.

Quite frankly, I bought this book as an identification aid after leafing through the color plates and deciding it offered a solid review of many Cuban land snails. It was only after getting it home and giving it a second look that I discovered that the true worth of the book went so far beyond an identification aid. This is an in-depth look at a complex ecosystem we should all understand – both for the importance of this particular ecosystem as well as its relationship and relevance to similar situations worldwide. Despite the lack of an index, I very strongly recommend "Cuba, the Landshells Paradise." Oh, and for those truly devoted land shellers, you will still have to invest in reprints of old books and library copies of monographs to identify many of the more obscure Cuban land snails.

Tom Eichhorst
Thomas@nerite.com

# A Cuban Land Shell Trip in Pictures

## By Simon Aiken

Earlier this year I had the opportunity to travel to Cuba and see for myself some of this wonderful country that is home to so many land snails found nowhere else in the world. In particular, I was interested in exploring some of the rocky outcroppings (mogotes) in the Pinar del Río Province. This province is renowned for rich black coffee, thick forests, therapeutic thermal springs, and sheer rock formations. Those of us interested in mollusks also know it contains some of the more intricately sculpted land snails of the families Annulariidae and Urocoptidae, as well as numerous endemic species of Helicinidae.

Pinar del Río province is on the western-most tip of the island and has been called the Natural Cathedral of Cuba. The varied flora and fauna of the region (with many endemic species) resulted in UNESCO (United Nations Educational, Scientific, and Cultural Organization) declaring two provincial localities as Biosphere Reserves (Peninsula de Guanahacabibes and the Sierra del Rosario) and the Valle de Viñales as a Cultural Heritage Landscape. So, camera in hand, we set out to explore this fascinating area and record some of the wildlife (especially the snails) found in the forest and on the rocky outcropping.

We got to the rocky hillsides by horseback and from there it was all walking and investigating each small crevice and interesting looking rock. The results of our search can be seen in the accompanying photographs. We were not disappointed.

Simon Aiken
Simon's Specialty Shell, Ltd.
http://www.simons-specimen-shells.com

**Above: Simon heading on horseback for Sierra de la Penitencia. Note the English-style cowboy boots.**

**Above: A view of the Sierra de la Penitencia from across some farm fields. *Blaesospira echinus infernalis* Torre & Bartsch, 1941, is found halfway up this mountain and has only been seen on two rocks! The climb is certainly worth the effort when the end result is viewing these delicate snails in their very restricted and specialized habitat.**

**Right top: A closer view of the mountains.**

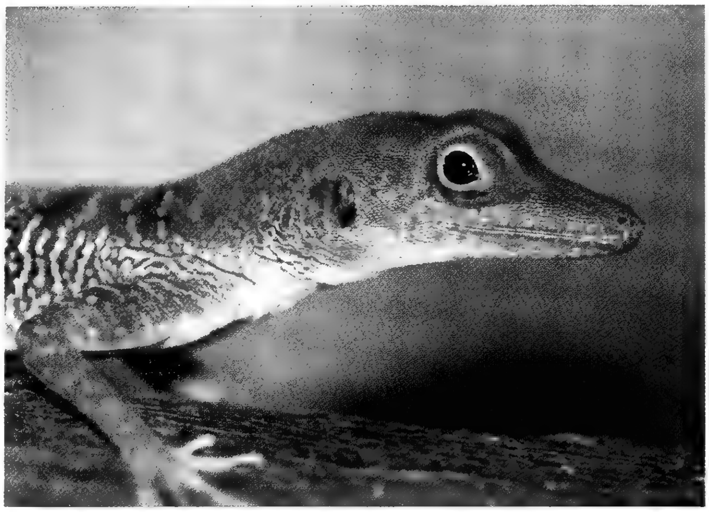
**Right bottom: *Oleacina* sp., 35mm, observed in the vicinity of the *Blaesospira*.**

Above: Simon (right) and friend Adrien at the base of the cliff in the Sierra de Gabino where the *Callonia* live. *Callonia ellioti* (Poey, 1858) was found about a third of the way up the cliff face. *Callonia lowei* Torré, 1927, was only found much futher up the cliff face.

Below: *Callonia ellioti*, 35mm, at home on the cliff face of the Sierra de Gabino. The shell spines are hollow and often broken at the tips. Many adult specimens also had broken protoconchs.

Above: *Blaesospira echinus infernalis* mating on the lichen-covered rock that seems to be home to this species. Note the missing protoconchs, a delicate structure broken off as the animal matures.

Below: *Proserpina depressa* (d'Orbigny, 1842), 6mm, a cryptic land snail related to marine dwelling nerites. This bright green shell fades to yellow in collections.



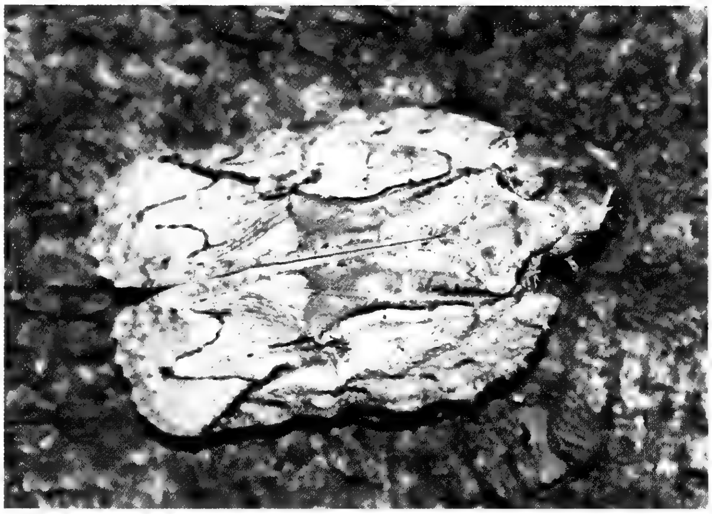
Above: This brightly-colored lizard, *Anolis bartschi* Cochran, 1928, is common throughout much of Cuba and is probably one of the lizards able to actively prey upon mollusks.

Below: A method of avoiding many predators is demonstrated by *Chondropometes magnum* Torré & Bartsch, 1938, as it hangs suspended by a thread. This annulariid shows the typical flared lip and calcareous operculum. There are dozens of genera and hundreds of species of annulariids in Cuba.

Above: *Phormictopus cubensis* Chaberlain, 1917, is called the Cuban bird-eating spider. This large spider (this specimen was over 160mm) is also able to prey upon mollusks.

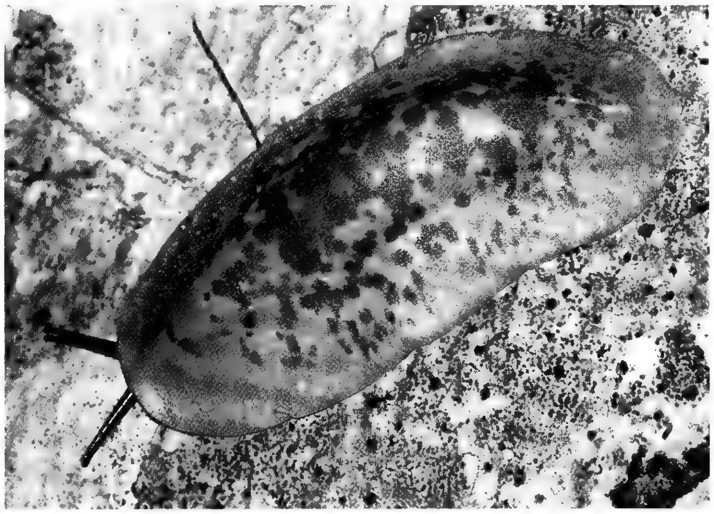
Below: *Emoda sagraiana* (d'Orbigny, 1842), approximately 20mm. This is a juvenile specimen and it will lose the rough periostracal attachments when mature, looking like a typical brown helicinid snail.

Below: *Tetrentodon* sp., 121mm, a member of the family Urocoptidae. Though many of the species in this family are fairly large for land snails, there are still a number of unnamed Cuban endemics.



Above: Imagine our surprise when this small patch of lichen moved! A moth found at Hoyo de los Helechos.

Below: *Veronicella tenax* Baker, 1931, 150mm. A slug large enough to avoid most molluscan predators, and distaseful enough to discourage those that might try.



Below: *Zachrysia guanensis costulata* Pilsbry, 1928. This subspecies is in the family Camaenidae, and while the shells of the different subspecies of *Zachrysia guanensis* appear similar, the animal are quite distinct.

Above: A colorful butterfly, the Gulf Fritillary, *Agraulis vanillae* (Linnaeus, 1758) found on the slopes of Sierra de Gabino.

Below: An unidentified frog, *Eleutherodactylus* sp. found in forest litter in Valle de la Jutía.

Below: *Zachrysia guanensis guanensis* Poey, 1857. Camaenidae are found in tropical forests worldwide. These two subspecies are interesting because of the similarities between the shells and the differences between the animals.

# Cruising...Cruising on The Suncoast

**By Bob Pierson**

**Join us July 19-23 2009 for Suncoast Conchologists' imaginary cruise aboard the *Silver Alatus*... help us shellabrate our 25th anniversary at the 2009 COA Convention on Florida's Clearwater Beach!**


Clearwater Beach is where you'll want to be next July! One of Florida's top tourist destinations, it's close to everything, yet miles away. Come and experience spectacular Gulf sunsets, vast sporting and recreational activities, fresh seafood, and great shopping! Our home port for this Silver Anniversary Shellabration is the Hilton Clearwater Beach Resort located on Florida's west coast. Our special convention rate of $159.00 + 12% tax will be honored for 3 days prior to the convention and for 3 days after

(space available) so that you can really make an unforgettable vacation out of the 2009 COA Convention.

You can make your hotel reservations now by going to: www.clearwaterbeachresort.com and **entering the Group Convention ID Code: SHELGS.** Or by phone, call 1-800-753-3954 or 1-727-461-3222. Overseas attendees call 1-727-461-3222. You **MUST** mention that you are with the Conchologists of America. You can reserve now and you will not be charged until you arrive next July. Please note that cancellations for any reservations at the Hilton must be made no less than 72 hours in advance.

If you are flying into Tampa International Airport (20 miles from the Hilton), you can take the SuperShuttle. Call 1-800-258-3826 for reservations. The current rate is $25/person. For those of you planning to drive, directions are provided in the registration inserts in this issue. Self-parking is complimentary for one vehicle per room for registered hotel guests.

**Come early and enjoy a choice of five shore-side excursions (field trips) scheduled for Saturday 18 July:**

**Fossil Trip (7:00 AM – 3:00 PM):** If you are into fossiling, we have a great trip planned to a pit south of the Bay area. Your

leader will be Roger Portell, a paleontologist from the Florida Museum of Natural History at the University of Florida in Gainesville. You will hunt for fossils in a pit from the Pleistocene and Pliocene epochs (3 to 5 million years old). Many of these species are still living today and you just might find some of them on the shelling trip. Hard hats and light-weight safety vests will be provided. We will provide food, water, a hand rake, and a collecting bucket. You **MUST** be at least 18 years old to participate in this trip. Remember, this will be the middle of July, so make sure you dress accordingly. Wear a hat and sunglasses and be sure to bring lots of sunscreen.

**Dive Trip (8:00 AM – 4:00 PM):** SCUBA enthusiasts can take this early morning dive trip to the Gulf of Mexico. Heyward

Matthews, Biology/Oceanography Professor Emeritus at St. Petersburg College, presently teaching oceanography and SCUBA diving, will personally escort you. He will probably take you to some of his favorite dive locations on both the natural and artificial reefs offshore in the Gulf. This trip is limited to the first six people who register and pay for the trip. Tanks, regulators, masks, and refreshments will be provided.

**For the less hardy, we have three more great trips that you can choose from:**

**Weeki Wachee Springs (8:15 AM – 4:15 PM):** You will bus to the "City of Live Mermaids" at Weeki Wachee Springs State Park, approximately two hours north of Clearwater Beach. This unique

Florida attraction has been in existence since 1947 when Newton Perry, a former Navy Frogman, devised a way of breathing underwater from free-flowing air hoses supplying oxygen from an air compressor. Since that time, a variety of movies and television specials have been filmed at the Springs. On this trip you will see the mermaids perform Hans Christian Anderson's "The Little Mermaid" live, just as they have been entertaining visitors for nearly 70 years in this spring where more than 117 million gallons of clear fresh 72-degree water bubbles up daily out of subterranean caverns. Do not miss the river boat cruise down the rustic Weeki Wachee River where you should see wild birds, alligators, and perhaps a family of wild otters in their natural habitat. Before you leave, take in the "Reptile Show" or "Feathered Follies" in the outdoor amphitheater. Lunch will be on your own at the park.

**The Florida Aquarium (8:30 AM – 3:30 PM):** Rated "one of the best aquariums in the country," the Florida Aquarium has been

completely refurbished since the 2004 Convention. You will be treated to an extended one hour behind-the-scenes guided tour that will answer many questions about what it takes to make an aquarium work. Questions like, "Where do you get all that water?" Or, "How do you feed all those fish?" The aquarium houses more than 20,000 aquatic plants and marine animals, such as the rare and exotic leafy sea dragons from Australia. Get in touch with cownose rays and bamboo sharks at the new 5,000 gallon touch-tank. Watch the Penguin Promenade. See the Ocean Commotion. Florida's water story is told in a collection of habitats following a drop of water from underground springs through the wetlands to the bays and beaches, and ultimately to the replica of the Dry Tortugas coral reef. Lunch is on your own at the aquarium.

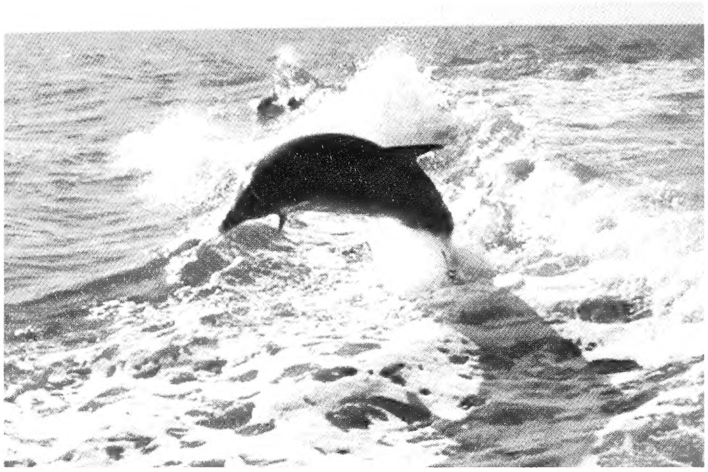
**Tarpon Springs and *Sponge-o-rama* Cruise (9:00 AM – 5:00 PM):** Tarpon Springs, an authentic Greek village just an hour north


of Clearwater Beach, is known as "the sponge capital of the world." This guided tour will take you along the lively waterfront that is a true working seaport with a quaint old world mix of boats, boutiques, and retaurants. See the movie and learn all about the sponge diving industry. Then enjoy the two-hour narrated boat trip down the

Anclote River to Anclote State Preserve for 30-minutes of beachcombing or swimming. The boat has a shallow draft, but be prepared to get your feet wet going ashore. The vessel is handicap-accessible, has open and enclosed viewing areas, a snack bar, and restroom. Lunch is on your own at Tarpon Springs.

**Three more trips are offered on the afternoon and evening of Tuesday, July 21:**

**Dolphin-Sighting Excursion (3:00 PM – 4:45 PM):** Did you know that dolphins are actually small whales of the order



Odontoceti? Or that there are 31 species of true dolphins? Those are some of the interesting facts that you may learn when you take the *Island Hopper II*, a 40-foot covered excursion boat with seating for all passengers. You will see dolphins in their natural habitat, tour Clearwater Harbor and have a 30-minute stop at Compass Island for some beachcombing or snorkeling. Masks and snorkels are provided. NOTE: because of the scheduled departure times, it **is** possible to take this field trip **and** the *StarLite Majesty* Dinner Cruise, but **not** this trip and the Shelling trip.

**Shelling/Wading Trip (4:30 PM – 10:30 PM):** Our convention dates were especially selected to coincide with a minus 0.5 tide.

We will bus you across the unique Sunshine Skyway Bridge to one of our normally prolific shelling areas where the sand bars and grass flats should be high and dry. Follow the trails and find such treasures as: *Busycon sinistrum*, *Busycon spiratum* (pictured), *Triplofusus giganteus*, *Fasciolaria tulipa*, *Melongena corona*, *Neverita duplicata*, *Sinum perspectivum*, *Oliva sayana*, and a variety of bivalves. Wear light-weight clothing and wading sneakers. We will provide a collecting bucket and a flashlight. Since you will be leaving the Hilton by late afternoon, a picnic supper is included.

***StarLite Majesty* Dinner Cruise (6:00 PM – 10:00 PM):** Sit back, relax and enjoy your dinner on this scenic cruise around Clearwater

Harbor. The *StarLite Majesty* is a 115-foot modern dining-yacht specially designed for harbor cruising. The two air-conditioned dining decks feature plush interiors and large picture windows for unobstructed views of passing scenery. You'll experience smooth sailing, a magnificent sunset, and a starlit evening as you dine on your choice from a menu that could include Chicken Marsala, Fresh Catch of the Day, a Vegetarian Harvest, Mediterranean Pasta with chicken or seafood, Key West Grilled Chicken, Pasta Alfredo with chicken or seafood, StarLite Shrimp Veloute, Classic Filet Mignon, or Surf and Turf. All entrees are served with baby green salad, the chef's selection of vegetables, bread and house dessert, plus coffee and tea, all prepared on-board. Boarding fee, dinner, gratuity, and shuttle from the hotel are included. A cash bar will be available, dress is casual.

**Other things to see and do**:

Try to take in at least one Sunset Celebration at **Pier 60** next door to the Hilton. This event even surpasses Key West's

Mallory Square for fun and entertainment!! See jugglers, fire-eaters, artists, and clowns! Pier 60 has it all.

You can also try our new **BeachWalk.** This $30.4 million ½-mile brick walkway winds it's way south from Pier 60 between the beach and Gulf Boulevard offering waving palms, assorted greenery, and seating areas where you can sit and watch the spectacular Gulf Coast sunsets. Then, if you get tired of walking, the **Jolley Trolley** will take you anywhere on the beach for just $1.00.

**Caladesi Island State Park**, voted America's #1 Beach in 2008, is right next door. The Salvador Dali Museum and The

Pier are in nearby St. Petersburg, and Pinellas County offers a host of other attractions. Log on to www.floridasbeach.com and see what interests you.

What else can you expect at the convention? The Bon Voyage Sail Away Welcome Party, of course, where you can help us christen the *Silver Alatus* on its maiden voyage. Plan on a wide varietry of interesting and informative shelling programs, silent auctions, the popular oral auction on Monday evening (cash bar available), the Ship's Store International Bourse Wednesday afternoon and evening, then continuing Thursday morning, and the Captains' Farewell Banquet on Thursday evening. And, in lieu of your typical shell show…

**Enter Our Suncoast Silver Spectacular Show**!

This unique collectibles show, in celebration of Suncoast Conchologists 25th (Silver) Anniversary, will be one of the highlights on Monday's schedule. There are six different categories, and you may enter one, two, or all, if you are game, with up to five entries per category. Unique 1st and 2nd place trophies will be awarded in every category. The categories are:

1. **Shells - Not Really**: Any item that looks like a shell, but is **not** a real shell.
2. **Sea Creatures**: Marine animals other than shells and crustaceans, real or imaginary.
3. **Snails - Your Favorites**: **No live snails,** please! All live snails will be confiscated at customs.
4. **Crusty Crustaceans**: Crabs, lobsters, shrimp, etc.
5. **Silver Sealife**: In honor of our Silver Anniversary, any **silver** or **silver-colored** sea life will shine here!
6. **Flotsam and Jetsam**: The usual and unusual, **other than shells**, that have been self-collected while beachcombing, wading, snorkeling, or diving. Include locality data.

Applications for the **Suncoast Silver Spectacular** are included in your registration inserts in this issue of *American Conchologist.*

**For more information: COA2009@aol.com**


## DONATIONS

The Convention is in need of shells and any shell-related items that are clean and in good condition that can be used for raffle items, silent auctions, or door prizes. We are also in need of specimen shells for our Shipboard Verbal Auction. Please include pertinent data with your shell donations (ie: the name of the shell and where it was found, including the state and country, if pertinent). Your duplicate shells might be the missing links for someone else's collection! Remember, donations are tax deductible and the proceeds of your gifts help support COA grants and research. Financial donations are also acceptable and help offset the expense of awards and other convention necessities. There are three categories for this year's financial donations:

First Mate: $10 -$99
Captains' Club: $100-$199
Silver Alatus Circle: $200+.

In order to be listed in our Passport Program Booklet, donations must be postmarked no later than June 22, 2009. All donations should be sent to: Katherine Smith, 3227 MacGregor Drive, Palm Harbor, FL 34684-2347 USA.

**COA APPRECIATES YOUR SUPPORT**